

Advanced Case Management with IBM Case Manager

Understanding case management and the Case Manager product

Installing, configuring, and preparing Case Manager environment

Designing and building a Case Manager solution



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**Advanced Case Management
with IBM Case Manager**

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Note: Before using this information and the product it supports, read the information in “Notices” on page ix.

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Preface

Case management challenges require insight, responsiveness, and collaboration. Advanced case management strategy from IBM® unifies information, processes, and people to provide a complete view of the case. Case management provides advanced analytics, business rules, collaboration, and social software to create more successful case outcomes.

IBM case management is supported with IBM Case Manager, an advanced case management product that unites information, process, and people to provide a 360-degree view of case information. With Case Manager, knowledge workers can extract critical case information through integrated business rules, collaboration, and analytics. Using Case Manager enhances your decision-making ability and leads to more successful case outcomes.

This IBM Redbooks® publication introduces IT architects and IT specialists to the case management concept, its benefits, and how it is different from traditional business process management or content management. In addition, this book introduces the IBM Case Manager product, designing a case management solution, setting up the appropriate environment, and building and deploying the solution. In addition, it serves as a practical guide for IT professionals who are responsible for designing, building, and deploying case management solutions.

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Part 1

Concept and overview

In this part we introduce the concept of case management and IBM Case Manager. We provide use case scenarios for case management systems and discuss design approach for such a solution.



Case management concept

This chapter introduces the basic concepts of case management, including those aspects of case management that make it unique compared with other types of business applications. The relationship between case management and enterprise content management, collaboration, and business process management are also explored. Lastly, the concept of case management solutions is introduced.

The following topics are described:

- ▶ Case management overview
- ▶ What makes case management unique
- ▶ The need for Enterprise Content Management
- ▶ The need for collaboration
- ▶ The need for Business Process Management
- ▶ Case management solutions

1.1 Case management overview

The concept of case management emerged from the realization that certain business applications performed by knowledge workers require a great deal of flexibility, adaptability, control and collaboration to achieve successful outcomes. Traditional enterprise content management (ECM) systems and the structured control of business process management (BPM) are insufficient to meet the requirements of these applications. In certain domains, such as health care, insurance, and the legal profession, case management is fairly well understood. The case management approach, however, can be successfully applied to a broad set of business applications, giving knowledge workers and businesses the capabilities they need to achieve their business objectives.

Case management is built around the concept of processing a *case*, a collection of information and coordinated tasks, by knowledge workers (or case workers) to achieve a desired outcome. A case typically has a “subject”, similar to the subject of a sentence or a narrative. The subject can be one of several types: a single person (for example, a patient, customer, employee, or tax payer), a legal entity (for example, a business, church, or government), two or more people/entities (for example, in a legal cases, Jones v. Smith or Jones v. State of CA), or an event (for example, a fraud occurrence, a security violation, or a system outage). A *case folder* is a mechanism for enabling the knowledge workers to store and retrieve information pertaining to the case and keep track of the tasks required to process the case.

A *case management solution* is the application of case management to a particular business problem, typically in a particular domain. Examples of case management solutions include customer complaint management where the subject is a customer, benefit enrollment where the subject is an employee, legal cases where the subject is a defendant, permit processing where the subject is a citizen, health care claim reimbursement where the subject is a patient, and credit card dispute management where the subject is a customer. For any case management solution there can be many active cases. For example, the customer complaint management solution will create a new case for each customer complaint. The term *case instance* is sometimes used to refer one of these individual cases.

Case management solutions are knowledge intensive and require case workers to coordinate the tasks, processes, and services required to achieve a positive outcome. These types of solutions require a large degree of flexibility and adaptability for the case workers to process the case. The requirement for flexibility makes these solutions hard to implement in traditional BPM systems because BPM systems require predictable and repeatable processes. Cases are less predictable than processes because the case workers' judgment and

experience is important and influence how the case is handled, and might influence the outcome of the case. However, case management solutions are also repetitive, and therefore require process support which makes it hard to implement them simply using an ECM system.

Case workers are not the only individuals who interact with a case. A case *participant* can be a user who helps process and close a case, or a user who performs management operations such as assessments, audit, and outcome analysis. Management functions can be performed on a single case instance or across many case instances. Case management solutions needs to provide participants with views into the case that enable them to efficiently complete their assignments. Not all the participants in a case need the same level of flexibility or access to the case folder, and in most situations one or a few knowledge workers control the case and other participants are restricted to performing well defined activities. The participants that interact with a case can be organized by roles. For example, in the credit card dispute case solution, roles can include customer service representative, dispute agent, dispute supervisor, data clerk, and fraud investigator.

Implementing a robust and effective case management solution requires a software platform consisting of a range of functionality, including content management, process management, business rules, collaboration, and analytics. The solution needs to integrate seamlessly into the work environment of the case participants. The user interface needs to provide flexibility (for example, the ability to dynamically add additional tasks to a case already in process) and allow a high degree of collaboration among the participants.

A case management solution should also provide case workers with the full context of the case on which they are working (termed a *360 view* of the case). In practice, case workers with enough privileges must have access to all the information pertinent to a case, including history, documents (of various media types), and content added by other case workers who have worked on the case. The 360 view should include all the process information for the case, including those completed and in progress. By having all the relevant information available, case workers can make better informed decisions.

1.2 What makes case management unique

Case management looks at solving partially-repeatable business problems from the perspective of addressing the tools needed by knowledge worker to close the case. This differs from the perspective taken by traditional BPM, which focuses on activities and the order and sequencing in which those activities must be completed to solve a problem. Case management recognizes that solutions

cannot be fully described in a BPM system because not all the activities are known before hand, the order of the known activities is unknown, or which of the known activities are really necessary to close a particular case instance is unknown. The perspective of case management is to empower the knowledge worker to solve the problem by designing a flexible solution that exposes all the case information including documents and all the tasks that might be required to solve the business problem. In addition, a case management solution allows the knowledge worker to dynamically add new tasks to a case instance already in process and to dynamically decide which tasks are not required to close a particular case instance.

Key differences between cases management and business process management include:

- ▶ Cases tend to be more unpredictable and rely more on the knowledge worker's judgment than on system control or business-rule-based control flow.
- ▶ Cases always involve human participants, whereas a business process management solution might not involve any human participants.
- ▶ Cases always involve content because content is what knowledge workers use to make decisions, whereas processes might not include content at all.
- ▶ The knowledge workers processing a case have the ability to decide which tasks are required to complete the case, whereas in a business process management system, the software executes activities based on those specified in process model and by business rules.
- ▶ The emphasis of case management is on designing a flexible solution for knowledge workers to solve a repeatable business problem. The emphasis of business process management is on designing a step by step procedure to solve a business problem.
- ▶ In case management, the business problem is solved by a knowledge worker using tools in the form of tasks that are not necessarily modeled, whereas in business process management, the business problems are always solved by following a modeled process.
- ▶ When a case is closed, the case folder remains accessible. Case closure (or completion) is a relative term in that a case is always accessible and can be reopened for additional processing as required.

1.2.1 Cases are knowledge intensive

The reason BPM and ECM technologies alone are insufficient for implementing case management is that cases are knowledge intensive, requiring the judgment of case workers. Therefore, the outcome of the case depends more on human judgment than on the underlying technology. The technology, however, must

support the case worker by providing the tools needed to advance the case to its resolution, but it cannot replace the judgment of the case worker and should not unnecessarily constrain the actions of the case worker.

Although the outcome of the case depends on the case worker's judgment, it does not mean that case workers can arbitrarily decide the fate of a case. Case workers must be able to justify their decisions and should collaborate, as necessary, to reach those decisions. The case management solution must support this knowledge-intensive activity by providing the tools and the facilities for the knowledge workers to accomplish their work, and at the same time providing the persistence, history, tracing, and monitoring needed to justify and audit the case workers' actions and decisions.

1.2.2 Cases can be unpredictable, but are goal driven

A case management solution provides the environment to process repeatable cases of a certain type (for example, credit card dispute resolution). Although the cases are repeatable, each individual case has enough variability that a knowledge worker's judgment is required to manage the case to closure. For example, a solution to process credit card disputes is designed to provide the tools to solve a repeatable situation, in this example, customers disputing charges to their credit cards. Although all the cases are about customers disputing charges to their credit cards, and the processing patterns are similar, each dispute is different enough that there is a certain level of unpredictability in the process. In general, the overall process pattern might look similar, but the caseworker has to react to new information in ways that cannot be predetermined. New information can change the outcome of a case in ways that can only be determined by the caseworker. This level of unpredictability makes it difficult to use BPM technology for case management solutions. However, not all aspects of a case are unpredictable, and so BPM technology is important to model the predictable aspects of case solutions. These predictable aspects of the case processing can be encapsulated into process fragments that can be used as part of the toolset that caseworkers use to work on the case.

Although cases can be unpredictable, every instance of a case has a well defined business goal. For example, in a credit card dispute case, the business goal is to resolve the dispute. Although each case instance, for example each dispute, has the same goal, the outcome of each case can be different. In the credit card dispute example, some disputes will have the merchant returning money to the customer, others will have the customer maintaining the charge in the credit card, others will have the bank fixing an accounting mistake, and so on. In this example, each case completed with a different outcome, but all of them met the same business goal of solving the credit card dispute.

Case management recognizes that a business goal can be achieved in multiple ways, not all of which can be predetermined. The path that follows from the start of a case to the completion of that case can be different for each case instance. The reason is that not all of the activities or steps required to complete a case can be known when designing the case solution, and for the known activities the order of execution might be unknown. This is a key difference between case management and BPM technology in which all the activities and their ordering must be known at design time.

1.2.3 Process spectrum

From a process perspective, we create a spectrum where formal, well structured processes are at one end and informal, ad-hoc processes are at the other. Formal processes used to be called *production workflow* in the 1990s, and today they are implemented by BPM systems. A formal process encodes the business goals the process is designed to accomplish, giving the BPM system full control over the business goal. These types of processes might not have any human intervention, but if they do, the participants on the process do not need to know the business goal because as long as they execute their assigned activities the BPM system will guarantee the business goal will be achieved. The BPM system is in complete control, which allows vendors to provide a full suite of functionality to model, track, monitor, and manage the processes. The process can contain business rules that change the execution path of the process, but the path taken is modeled.

Informal processes, at the other extreme of the spectrum, were called *ad-hoc workflows* in the 1990s, and have evolved into today's collaborating technologies including email and instant messaging. The informal process is not modeled and cannot be easily tracked by the system. The participants in the process must agree and understand the business goal that they are trying to achieve and have enough information about how to achieve it. There is no process to follow, and the system does not know when the goal is achieved or when the process is started. These types of processes and technologies are useful for non-repetitive and one-of-a-kind assignments that do not need to be tracked or audited.

Case management tries to achieve a balance between formal and informal processes by formalizing parts of the process, and calling them *process fragments tasks*, and by having the system be aware of when the case starts and when it finishes so that the system can track and monitor the cases. In case management system, the case workers are in control on how cases are processed, but they do not need to know all the details on how to achieve it, and the system can detect when the goal is achieved. Using the concept of tasks, process fragments are available as tools for the case worker to use.

Figure 1-1 shows aspects of the process spectrum and position case management in between formal and informal processes. It does not cover all aspects of case management, but it covers some of the aspects that are common with business process management.

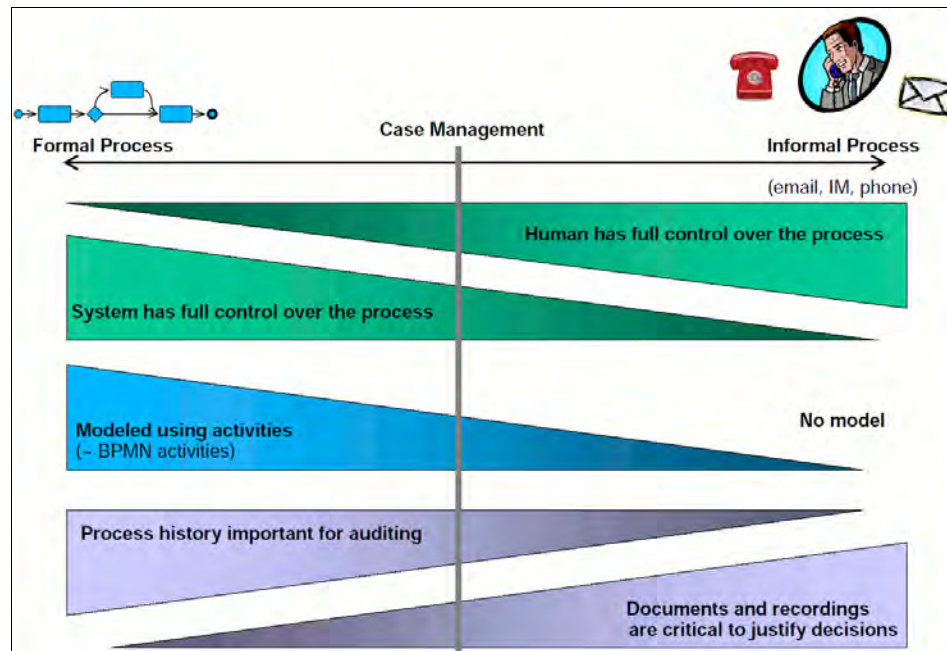


Figure 1-1 Process Spectrum

1.2.4 Modeling

Case and process modeling are separate. By modeling, we mean the definition of the solution by a person using a tool to describe the solution that must be executed by the system. The tool is normally called a modeling or design tool, and the model is the human readable output or printout produced by the tool. Because BPM has been studied for many years, BPM process modeling is now well understood and formalized by standards like the Business Process Modeling Notation (BPMN). Case management has not been studied as long or as deeply; therefore, case modeling is not as well understood. There is an effort underway at the Object Management Group (OMG) to define a modeling notation called Case Management Process Modeling (CMPM) which will help clarify and formalize case management modeling.

From a modeling perspective, case modeling focuses on knowledge worker needs, and so allows the person modeling the case to define the tools needed to complete a case. Those tools can be modeled as tasks, which can be process

fragments. The modeling of cases focus on “what” need to be done to complete a case instead of “how” it should be done. Tasks in a case then describe “what” need to be done. By not defining the “how,” a lot of flexibility is given to the case workers to decide the best tasks for a particular case instance. On the other hand, BPM models focus on the activities required to achieve the business goal and the efficient ordering of those activities. Therefore, BPM models describe “how” the process should be done, in addition to “what” needs to be done.

1.2.5 Tasks

In order for case modeling to achieve a balance between formal and informal processes, a new concept must be introduced to break the formal processes into process fragments. This concept is the case *task*, which corresponds to a process fragment, but could also be implemented with other non-BPM technologies. This new concept allows case management system to find the right balance between formal and informal processes.

The concept of task enables the modeling of the known process fragments and the ability to provision them to the case workers as tools to apply to case instances. In addition, it allows the person modeling the case the ability to just model the process fragments that are well known and leave the rest for future modeling.

Tasks breaks the model of cases into two level of abstractions. The task represent a higher level of abstraction than processes and describe “what” needs to be done. A task can also describe “why” it needs to be done. For example a task to review the customer application can need to be done if a new customer application is received. This allow the person modeling the case to model at a higher level of abstraction and avoid describing the details of “how” a task must be done. Therefore, when modeling a case, the person is trying to answer the “what” and “why” questions using tasks. In contrast, when modeling a BPM process, the designer answers the “what”, “who”, “when”, and “how” questions.

The implementation of the tasks details corresponds to the lower level of abstraction, and might involve the modeling of a process fragment where the answer the “what”, “who”, “when”, and “how” questions must be provided. However, it could also be implemented by other technologies or applications.

Figure 1-2 on page 11 shows the IBM Case Manager case task page with a model of a case containing seven tasks. Note that tasks are not connected with lines as in traditional BPM systems because there is no execution order between them. The tasks are designed as tools for the case worker.

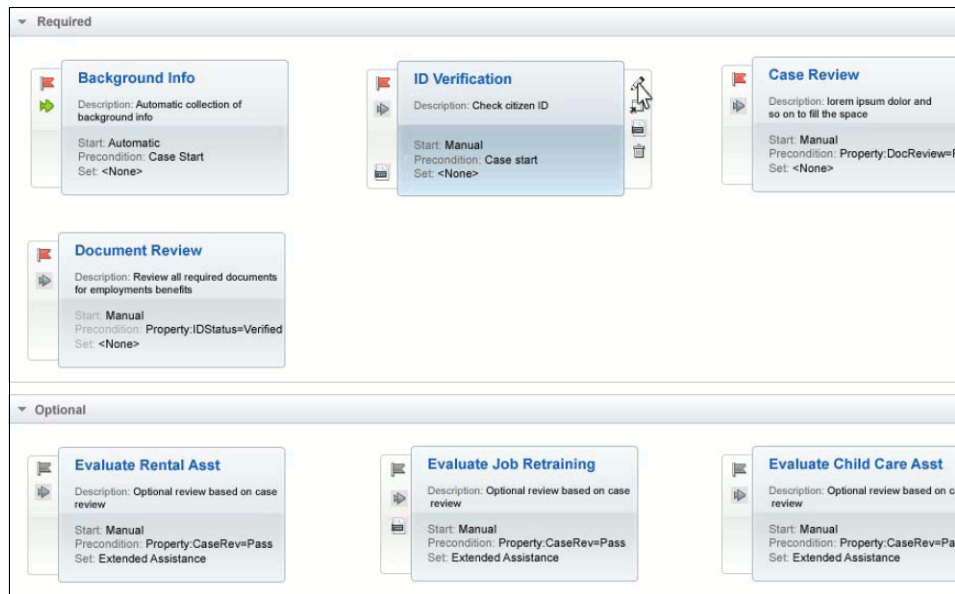


Figure 1-2 Example of tasks modeling in Case Builder

1.3 The need for Enterprise Content Management

During the processing of a case, multiple documents can be produced and consumed by the various participants interacting to solve the case. Documents are a key part of any case management solution because knowledge workers depend on documents to complete their tasks. Case workers are no different, and so, in the process of resolving a case, multiple documents can be created and used. These documents might be e-mails, text documents, spreadsheets, voice recordings, images, video clips, or presentations. All this information must be stored and organized as part of the case. This requires cases to have a flexible containment mechanism, similar to a folder structure in a file system. However, a typical file system is not flexible enough to store case information. For example, a document might be simultaneously used in multiple cases, and therefore must reside in each folder. A change to the document must be reflected in all the cases. It is also important that metadata, versioning, and security is maintained so the complete history of the case is kept current and traceable.

These requirements are achieved in case management solutions by using an ECM system, and implementing a case folder to collect all the information related to the processing of a case by the case participants. A case folder (and all its contents) is maintained after the case has been completed for legal and compliance reasons. The retained case can also be used in future cases or for

analysis across cases. A well designed case management solution must include the design of the content management aspects like folder organization and document types, including metadata.

Information complexity

The amount of information or documents required to complete a case can be different for separate instances of the same case solution. Certain cases will require more documentation or investigation than others, translating into cases having different amounts of information. This complexity translates into case information complexity, which requires organizing the case information. Case documents and information is normally organized in a hierarchical containment structure similar to a traditional folder structure called a case folder. For example, a customer dispute case might have a folder structure as shown in Figure 1-3 on page 13. The folder structure will be populated with the documents and files required to solve the case.

Having the case populated with multiple documents of various types introduces the need to associate metadata with those documents. It also introduces the need to provide content and metadata search capabilities. Finding information in a case is different than finding information in a database because that information might be inside the documents and thus are not readily visible. Case workers need the ability to easily find the information that they require to work on the case, even if that information is buried inside the documents stored in the case. ECM systems make it easier to work with this complexity of information.

The need to find case information is not only important for case workers handling a single case instance, but for participants (such as managers or analysts) dealing with aggregations of case instances. These participants must be able to extract patterns occurring on case information, for example, determining the frequency that a particular pattern occurs in a collection of cases. In the credit card complaint solution, a manager might want to find the percentage of complaints filed for a particular product or a particular merchant. This information might only be present in the documents or emails contained in the cases.

Security

The use of a ECM system to store case management content including information and documents allow case management solutions to maintain a fine-grain access control over the information. It is common for cases to deal with sensitive information and documents that must be protected from unauthorized access. In certain scenarios, even those working on the case can have limited access to the case information.

Retention

Case information is long lived and can be subjected to the life cycle of content objects in an ECM system. In particular, when the processing of a case is completed, all the case information remains and is still available for users with the right security privileges. Cases therefore can be reopened for processing or auditing if required.

Case information including history and documents can have regulatory compliance retention requirements. Cases are normally implemented as a case folder to collect all the information and document related with the process of a particular case, and the case folder is retained after case completion. This allows future cases to use the information and facilitates compliance with legal and regulatory requirements. Even when regulatory compliance is not required, the retention of case information is important for auditing purposes. For example, either for regulatory compliance or auditing purposes, certain documents might need to be retained for five years, whereas others must be retained for ten years. The case management systems should be able to enforce those regulatory compliance policies.

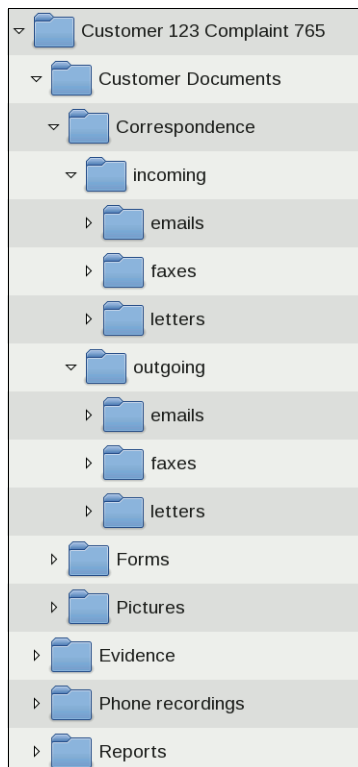


Figure 1-3 Case for customer 123 showing case folder structure

1.4 The need for collaboration

Case workers not only need to use the information about the case to make decisions, but they also need to collaborate with other participants in the case. Most of this collaboration is through the documents and information contained in the case folder, (including case notes, additional documents added to the case, and decisions made). Other collaboration might be through case worker communication. Case workers should be able to communicate with others working the same case through case notes, instant messaging, email, and phone conversations. Technology supporting a case management solution needs to provide these types of collaboration technologies, and the capability to maintain the collaborations as part of the case folder for case resolution and audit purposes.

Case management recognizes that not all the tasks, steps, or activities of a solution can be predefined. Therefore, a case worker's judgment and collaboration are used to resolve the case. In certain case solutions, negotiation and collaboration between case workers is as important, or even more important, than imposing a fixed set of activities in a particular order. However, too much negotiation and collaboration can slow down the solution of a case, so a balance must be achieved. In many situations, experienced case workers can achieve the right balance, but in other situations, business rules and analytics in the form of decision support can be used to help strike the right balance.

Routine work and knowledge work

Most case solutions require both knowledge workers and routine workers. Routine workers are sometime called heads-down workers, and are assigned repetitive work that requires little judgment. Routine workers are well suited for data entry applications, like scanning correspondence and certain types of BPM applications.

In processing cases, organizations should manage the use of routine workers and knowledge workers assignments. Most organizations manage the two pools of workers separately, and separate routine workers roles and knowledge workers roles. The concept of role allows organizations to fulfill those assignments by moving workers between the roles, or having workers assigned to multiple roles at the same time. Roles allow managers and supervisors to quickly and easily move resources where they will be better utilized.

1.5 The need for Business Process Management

A common characteristic of both BPM and case management is that both formal processes and cases can perform well structured, repetitive, goal-oriented work. For example, loan origination is a typical goal-oriented repetitive activity. It is repetitive because there are multiple instances of loan origination being processed at the same time, for example one for John's loan and another for Mary's loan. It is goal-oriented because each instance has the goal of processing the loan origination to completion and providing the customer with either a loan or a justification for denying the loan. Therefore, loan origination can be implemented using BPM or case management technology depending on how flexible the solution needs to be. A case management implementation provides much more control to the knowledge workers processing the loan origination than a BPM implementation.

If a portion of a case is well structured, then process fragments can be modeled as a single task in the case. Process fragments implementing tasks are important for a case management system because they implement manageable and auditable activities within the case. The process fragments allow the implementation of tasks that enforce and guarantee compliance to policies when required. In addition, tasks can take advantage of all the BPM technology (for example, compensation and transactional integrity) to provide case workers with the tools they need to complete their tasks.

The execution of a case to its completion is achieved by a symbiotic collaboration between the case management system and the case workers that select which tasks are applicable for the current case. These tasks might be optional process fragments that are selected by the case workers for the current case instance. From an auditing and monitoring perspective, the executed process fragments are all treated as part of the same case and not as independent processes.

The encapsulation of BPM process fragments into tasks allows case management systems to provide governance and management of those fragments at the task level. The execution of tasks can be enforced by the system or can be left to the judgement of the case worker.

1.6 Case management solutions

A case management solution provides the software environment for case workers to collaborate on the completion of cases. The solution can be modeled and deployed using a case management system. As described earlier, the solution is implemented using multiple technologies including ECM, collaboration, and BPM. A case management system is used to bring all those

technologies into a coherent framework to develop and execute this type of solution.

Although the case is the focus of a case management solution, the solution might be composed of multiple types of cases. For example, a customer complaint solution might have multiple types of complaints depending on the product or service the customer is complaining about. Each type of complaint can be slightly different and can be managed by different case workers. Therefore, a solution is normally composed of one or more types of cases.

Case management software solutions are appropriate for repetitive situations in which the work that needs to be accomplished is goal oriented, knowledge intensive, and highly collaborative. These types of solutions are based on documents (such as emails, faxes, pictures, video, and voice) that are required for the knowledge workers to make the decisions required to achieve the goal. In a knowledge worker environment, the judgment of the participants impacts how the goal is achieved, and case management provides the tools and collaboration environment for the knowledge workers to complete their cases.

Case management solutions are also appropriate for works that involve complex decision making by knowledge workers based on the information and documents associated with case instances. Typical applications include exception handling, complaint or dispute management, contract management, lending applications, benefits enrollment, invoice processing, change request, and incident reaction. These types of solutions require the integration of capabilities from multiple technologies including content management, BPM, collaboration tools, social software, business rules, and analytics. The case paradigm is applicable in multiple industries and environments including insurance, banking, health care, government, and utilities.

1.6.1 Case folder

A case consists of the collection of information used to achieve a business goal. The natural way to organize that information is to use a case folder in an ECM system. The case folder might contain a folder structure with sub-folders each containing documents, history, and other information used to process the case. In general, the case folder will contain all the information used to process and manage the case.

The case folder provides the context for the case workers to do their work. The information contained in the case folder can be categorized into four types, as shown in Figure 1-4 on page 18. The four types are:

- Documents: Case management is content-centric, and case workers as knowledge workers base their work on documents, including emails, text

documents, pictures, spreadsheets, and others. The case folder provides the container to collect all the documents used in solving the case.

- ▶ History: Everything that happens to the case and its content must be recorded as history, and the case folder provides the container to keep that history. The history includes when the case was created, when documents and information were added, case comments, when tasks were initiated and completed, and so on.
- ▶ Properties: Not all case information is contained in documents. There are discrete properties that identify the case and hold important status information about the case that must be associated with the case folder such as the customer name, case priority, account number, and so on.
- ▶ Tasks: The case folder should contain all the tasks that can be used in the case, and each task should contain state information. Some tasks may be waiting to be executed, executing, or completed execution. In all of those situations enough state information and history should be preserved in the case folder.

This collection of diverse and rich information is important to maintain in a central place for case consistency and integrity. That central container is the case folder. Having the case folder in an ECM system provides the governance, life cycle management, search, archival, and security required. Case information is long lived, so after the case is completed, the case folder and its information must be maintained in the ECM system. Cases should react to what is happening in the case folder so new tasks can be executed, for example when documents are added to the case, case properties are modified, or based on case actions. Case workers in the right role and with enough security privileges can view the state of the case tasks, and they can disable, execute, or add new tasks to the case.

Figure 1-4 on page 18 shows the basic functions of the case folder.



Figure 1-4 Case folder concept

1.6.2 Tasks

In a case management solution, tasks are tools the case workers use to process a case. The case worker or workers in charge of a case must decide which tasks should be executed to complete the case. Depending on the modeling of the case solution, tasks might be initiated by the system, or might be classified as required or optional. Case worker with enough privileges can start, disable, or add new tasks depending on the requirements of the current case instance. Figure 1-5 on page 19 shows the interface a case worker can use to interact with the tasks in a case solution implemented using IBM Case Manager.

Tasks that are well understood can be defined as part of the modeling of the case solution. Figure 1-2 on page 11 shows an example of such a model. Not all the tasks are well understood at modeling time. The case workers can add new tasks when working a case. In a similar manner to case modeling where tasks introduced a higher level of abstraction than the process fragments, during the processing of an actual case, tasks introduce a higher level of control. Case workers in the right role with enough privileges have the ability to see and control the tasks using an interface similar to the one shown in Figure 1-5 on page 19. Other case participants will have work to be done in their role or personal inbaskets and might not have access to the high level tasks. Therefore, tasks are

not assigned to people, but personnel assignments can be done in the process fragments implementing the tasks.

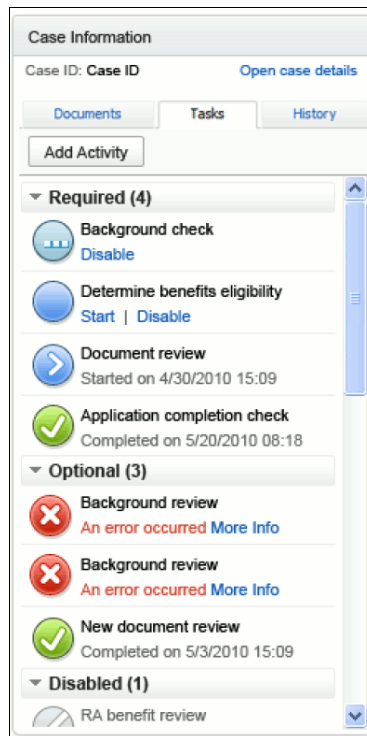


Figure 1-5 Example of tasks available to the case worker

Neither ECM systems nor BPM systems have the notion of tasks as implemented by case management systems. Therefore, flexible case solutions using the task concept can only be implemented using a case management system.



Typical case management applications

In this chapter, we discuss solution patterns in industries that are suitable for case management applications. We also explore a specific use case of a case management application, a credit card dispute application, in greater detail.

Specifically, we cover the following topics:

- ▶ Industry trends
- ▶ Specific use case: credit card dispute

2.1 Industry trends

As described in the previous chapter, there are solutions that are better suited for case management than for other technologies. The need for case management emerges from the need to provide flexible solutions to knowledge workers to solve complex problems involving documents, collaboration, and processes. These solutions have been traditionally implemented using business process management or enterprise content management technologies.

Competition and a more complex business and regulatory environment is driving companies in various industries to the optimization of their operations. This requires the introduction of knowledge workers to solve the complex business situations companies encounter in the current business environment. These knowledge workers require flexible software technologies to help solve the complex business situations they encounter. Most case management solutions are designed to equip knowledge workers with the tools they need to tackle those wide industry trends.

The case management paradigm of having a case folder to help knowledge workers to solve a problem on behalf of a subject is a pattern that appears in multiple industries. In certain situations, the pattern is industry specific, such as mortgage servicing or court case management. A few of the solutions are applicable to every industry such as customer dispute, customer complaints, and fraud investigation. Fraud investigation is a solution pattern that is applicable across most industries including banking, insurance, healthcare, government, and utilities. For example, a bank customer might questioning activity in his or her account, resulting in a fraud investigation. Another example is a government agency looking into the possibility of an improper benefits being paid to a citizen.

2.1.1 Solution patterns

The need to provide knowledge workers with the tools to solve structured, repetitive, goal-oriented work that provides a great deal of control and collaboration introduces a few solution patterns. Case management solutions are based on those patterns. Those patterns include:

- ▶ The use of a folder as the central focus of the solution with all interactions and supporting artifacts residing in that central container.
- ▶ The solution being designed for knowledge workers or experts to solve a repetitive goal oriented business situation. The expert's experience and judgement affect how the resolution is achieved.
- ▶ The need to provide collaboration technologies to support the knowledge workers and experts while solving the business situation.

- ▶ The use of non-predetermined activities as a major element of the solution, giving knowledge workers and experts the ability to add activities to the solution as needed.
- ▶ The use of rich content as part of the solution. Most complex business situations require multiple type of documents, including text documents, spreadsheets, presentations, video, pictures, and so on.
- ▶ The use of event-driven activities. For example, a bank customer filing out a dispute form might automatically start a credit card fraud investigation.
- ▶ The use of analytics for seeking patterns among real-time or historical data.

2.1.2 Challenges by industry

Industry faces many challenges. One of them is how to improve the productivity of their knowledge workers and improve customer satisfaction. Case management technology helps to achieve these goals by providing a flexible technology that can be used to create knowledge worker applications to help with customer interactions. Although the goal is similar, each industry has specific applications that are well suited for case management.

Insurance

In the insurance industry, the need for efficiently acquiring customers and retaining them is a central theme in all case management solutions. The following list shows insurance industry challenges that are ideal candidates for case-based solutions:

- ▶ Policy issuance
- ▶ Policy underwriting
- ▶ Claim handling
- ▶ Annuity management

Banking

The banking industry recently has seen many changes due to regulation and the economic cycle. The efficient management of customer interactions or inquiries is as important as asset management. The following list shows banking industry challenges that are ideal candidates for case-based solutions:

- ▶ Loan request
- ▶ Dispute resolution
- ▶ Customer inquiry
- ▶ Mortgage servicing
- ▶ Account opening and maintenance
- ▶ Credit card inquiry
- ▶ Personal credit line request

- ▶ Investment and wealth management

Healthcare

With ever increasing regulations and a growing need for healthcare services, the demands on the healthcare industry have forced it to become more efficient. This need has highlighted the benefit of a case management solution. The following list shows healthcare industry challenges that are ideal candidates for case-based solutions:

- ▶ Patient case management
- ▶ Member management
- ▶ Provider management

Government

The demands of an increasingly aware citizenry have forced government agencies to respond accordingly. Government-citizen interactions by their nature lend themselves to a case management solution. Case management solutions address the following typical challenges:

- ▶ Benefit enrollment administration
- ▶ Grant request and administration
- ▶ Citizenry management
- ▶ Taxpayer management
- ▶ Court case management

Utilities

The utilities industry has worked in the context of cases for many years. However, utilities have worked in this context either manually or by using technologies not designed for this purpose. Government case management solutions in the utilities industry address the following challenges:

- ▶ Rate case justification
- ▶ Claim management
- ▶ Permit request management
- ▶ Land rights management
- ▶ Property management

2.2 Specific use case: credit card dispute

The specific use case used in this book is for illustrative purposes only and is fictitious. This use case example is not intended to describe an exact process or industry best practice. The use case example is meant to detail a scenario for showcasing case management solution functionality.

In this scenario, a customer calls in to dispute a charge on their credit card statement and a case is opened to track this dispute. Often these cases can be resolved quickly on the phone with the customer. But a smaller subset of cases are more involved and require the creation of a case where details of the case might need to be gathered from customers, third parties and disparate systems. Resolving the case requires collaborative work between multiple teams, inside and outside of the organization. There are regulatory and company Service Level Agreements (SLAs) that dictate time lines and interactions with the customer.

Credit card dispute management is one of the key areas of customer service for credit-card-issuing banks. The efficiency of this process has received more scrutiny in the past few years due to the increased number of credit card disputes raised by customers and the fact that regulatory reform has placed more pressure on creditors to efficiently and timely process these disputes.

Successfully managing customer credit card disputes requires efficient interactions between customers, merchants, the card-issuing bank, and credit card agencies. Errors or inefficiencies in the processing of dispute cases can result in additional costs, delays, and eventually unresolved disputes and decreased customer satisfaction.

2.2.1 Customer scenario

For this example, a customer goes onto the web and finds a hotel-discount-booking website. The company offers rooms at a greatly discounted rate in exchange for pre-payment of the hotel booking. The customer selects a hotel and pre-pays for a three night stay. The customer gets a confirmation through email of the booking with a reference number, room rate per night, and the hotel information. Thinking that the transaction is completed, the customer simply waits until the vacation time to check into the hotel.

At the time of the room check-in, the hotel's front desk receptionist asks the customer to pay for the three night stay. The customer responded that the payment was already made. However, the hotel receptionist does not find the payment shown in the hotel's computer system. Now the customer thinks the previous pre-pay on the web might have failed and was not actually charged to the credit card, or that the charge will eventually show up in the hotel's computer system. In either case, the customer thinks there must be a mistake somewhere and it will be resolved between the bank and the website company. The customer pays the three-night stays to the hotel with the same credit card and enjoys a pleasant stay.

Upon return from the vacation, the customer receives the credit card billing statement. The customer notices two identical charges for the same hotel stay. The charges are from two separate vendors. One charge is from the online hotel

booking website on the date when the customer booked the room. The other charge is from the hotel itself on the date the customer arrived at the hotel.

The customer attempts to contact the online hotel booking company to clarify the charges but to no avail. At this point, the customer suspects something is wrong. The customer contacts the bank and notifies them of the situation and the customer's suspicion. The bank customer service representative informs the customer that the bank will investigate and get back to the customer. In the interim, the representative asks for the customer to fax in a copy of the confirmation from the online booking company and a copy of the hotel payment receipt.

2.2.2 Overall case flow

In credit card disputes, the customer has several ways to start the case with the bank, including mail, fax, or calling the bank. In this particular example, the customer calls the bank. After working through the automated system, a customer service representative picks up the call and gathers details about the case. The representative will resolve the case on the phone if possible. If he cannot, he will forward the case on to a dispute agent who will own the case through to its conclusion. The dispute agent works with the customer, merchant, and others to review the case and gather details. She can close the case directly, apply a credit to the customer's statement, or request a charge back. If the merchant accepts the charge back, then the case is resolved. If not, that initiates a representment process and the dispute agent must decide based on the details of the case whether to pursue it further with the merchant or re-bill the customer. In addition to opening a new case, an older case that has been completed might be reopened on behalf of the customer. An example of reopening a case is when a dispute with a customer was settled few months ago, and the merchant bills the credit card again.

At any point, the customer service representative or dispute agent can submit the case to the fraud department. There might also be rules in place to automatically determine if there is potential fraud. If the fraud department accepts the case, they will likely create a new case to investigate the account. This new case will be populated with the original case information so all the documents and phone conversation recordings are available to the fraud case.

Throughout the case life cycle, there is incoming supporting documents and there is correspondence being generated that is sent to the customer, the most common of which are status updates. All participants have access to the case details and it is critical that the case context is as complete and consistent as possible during and after the case is completed.

The credit card dispute case can be closed and later activated again. After the case completes, all the data and documents used in the case are maintained for future reference. An audit is an example of a future reference where case data might be used. The customer might re-open the case by calling a continuation of the complaint. For example, if a recurrent charge is billed to the customer again, the case might be reopened to further investigate that incident.

2.2.3 Content used in the case

As in any case management solution, credit card dispute requires a set of documents that are used by the case workers to process the case. Documents might be collected for compliance or regulatory purposes only and might not be directly used by the case workers. A common example is the phone recordings that take place during the credit card dispute. The types of documents that might be used in a credit card dispute include:

- ▶ Dispute form: This could be an optional document only used if the customer were to mail, email, or fax in a dispute form describing details of the issue.
- ▶ Customer correspondence: The customer might be required to submit certain documents, and he or she might volunteer additional documents. These can include receipts, invoices, emails, pictures, and so on.
- ▶ Outgoing correspondence: Any letters, emails, or documents sent to the customer by the bank.
- ▶ Charge back documents: The generated documents that are sent to the credit card agency or association representing the merchant.
- ▶ Phone recording: Phone calls recorded during the case.

2.2.4 Participants assignment

There are several participants that collaborate in the solution of a credit card dispute. In this example, the participants include:

- ▶ Customer service representative: The customer service representative takes customer calls, and can initiate a credit card dispute case based on the customer's information and concerns.
- ▶ Dispute agent: The dispute agent is responsible for resolving the dispute.
- ▶ Dispute supervisor: The dispute supervisor is in charge of a group of dispute agents and in complex cases, might get involved in certain decisions.
- ▶ Data analyst: The data analyst looks for trends or patterns within set of cases, and might get assigned to investigate suspicious patterns.

- ▶ Business analyst: The business analyst has overall knowledge on how the credit card dispute is handled.
- ▶ Fraud investigator: The fraud investigator specializes in identifying fraudulent activity by either customers or merchants.



Designing case management solutions

In this chapter, we discuss a generic approach to design a case management solution with the use of the sample credit card dispute use case introduced in 2.2, “Specific use case: credit card dispute” on page 24. We do not describe the specific implementation steps for an IBM Case Manager solution.

We cover the following topics in the chapter:

- ▶ Solution design approach
- ▶ Gathering business requirements
- ▶ Clarifying results of the requirements phase
- ▶ Describing the artifacts of a case management solution
- ▶ Using the iterative implementation approach
- ▶ Documenting the results of the design phase
- ▶ Using templates
- ▶ Summary

3.1 Solution design approach

In this chapter, we present an approach for the solution design phase. When working on the solution design for a case management solution, there is no single approach that fits all scenarios. For example, what, when, and how you collect all the required information during the design phase depends on the input from the preceding requirement gathering phase and the stakeholders' existing experience with this type of solutions. This also depends on the development methodology being employed.

The solution design approach we present in this chapter should only be used as a guideline on how to design your case management solutions. In general, you need to cover the following steps which are described in more detail in the subsequent sections:

- ▶ Gather requirements from business stakeholders.
- ▶ Clarify results of the requirements gathering phase.
- ▶ Map the real world objects in scope of the solution to the artifacts of the case management solution.
- ▶ Validate the solution using an iterative implementation approach.

Basing the solution on templates is optional but can significantly speed up the design process. The use of templates is discussed in 3.7, "Using templates" on page 48.

3.2 Gathering business requirements

The requirements analysis starts with assessing how users currently handle cases. When implementing a case management solution, organizations often attempt to improve on the way users are processing cases. The scope of this section is not to discuss the required steps to perform the actual business analysis or perform process optimization. We focus on describing the required results from this phase.

You need to obtain the information described in this section from the business stakeholders. Ideally, all results of the requirements analysis should be fully documented in writing. In reality, this documentation is usually only partially complete. If requirements are not clearly documented, you need to have access to the people who can provide the required information. These stakeholders can provide the missing information in the subsequent solution definition sessions.

Standard notations to document requirements exist for aspects of a case management solution such as the definition of task steps. Whether these notation standards are used depends on whether the notation use is already established in the organization and whether the required tools are available. More often, you see the requirements are documented using standard office tools, such as spreadsheets, that are widely available for all stakeholders in the requirements-gathering phase. Given this non-standardized format of notation, the documents require explanation to help individuals read them correctly. This explanation of documentation is therefore crucial to relevant stakeholders participating in the solution design.

3.2.1 Required business input

Business requirements come from content, tasks, roles, and rules. We discuss each area of the requirements with specific examples derived from the credit card dispute use case introduced in 2.2, “Specific use case: credit card dispute” on page 24.

Content

There are always content involved in a case. A case management solution must support knowledge workers by providing them with the content they need to handle the case and make decisions. Besides the existing content, knowledge workers might also gather additional content, create content, and update content while working on the case.

Content for a case management solution can exist in the following forms:

- ▶ Documents in the form of spreadsheets, word processor documents, emails, sound files, and so forth (unstructured content)
- ▶ Data in the form of case properties, task properties, and document metadata (structured content)

The results of the requirements analysis include the content types associated with the case. The requirements analysis also documents when in the case life cycle the content is used or created.

Besides assigning metadata properties to documents, documents associated with a case are typically filed in folders with structure information. You need to describe the hierarchical folder structure for the various case types.

For the sample credit card dispute use case, the content needed to handle the dispute includes:

- ▶ Copies of the disputed receipts

After the dispute is initiated, the customer faxes a copy of the disputed receipts. For the sample use case, these are the online hotel booking agency's pre-pay confirmation and the hotel payment receipt. This content is required to continue processing the case. This content needs to be filed under a folder called "customer correspondence".

- ▶ Data describing the customer relationship information

When creating the case, the customer services representative enters the credit card number of the customer. The system retrieves related customer information from the customer relationship management (CRM) system and adds this information to the case.

- ▶ Data describing the disputed transaction

When creating the case, the customer services representative enters the disputed transaction ID and amount. If this information is not available when creating the case, it is entered when the customer has sent the copies of the disputed receipts.

Tasks

While working on a case, various tasks have to be executed. The user handling a case can either start these tasks manually, or the system can start them automatically based on preconditions. Tasks are the high level operations required to complete a case. At the initial design, you want to identify the main tasks, while ignoring the details on how the tasks must be implemented.

For each task, you need to define what needs to be achieved when executing this task. You identify when and why it will be executed. For example, certain tasks might need to be executed when the case is created, whereas others might depend on the arrival of a particular document in the case. In the initial step of listing the tasks for the solution, you do not need to define by whom and how exactly the various steps within the tasks are accomplished.

The steps required to perform a task need to be defined after the main tasks have been identified. In many cases, the steps for a single task can be described as process fragments. These process fragments define the sequence of a limited number of user interactive steps using simple routing options. The definition and implementation of the processes associated to tasks is discussed in more detail in 3.4.5, "Tasks" on page 43.

For the sample credit card dispute use case, we identified the following tasks:

- ▶ Send confirmation letter and request receipts
After creating the dispute case, the system automatically sends a confirmation letter to the customer requesting copies of the disputed receipts.
- ▶ Manage dispute
After the customer sends the requested copies of the disputed receipts, someone has to assess these documents and decide how to settle the dispute. The system should automatically trigger this task upon arrival of the requested documents.
- ▶ Vendor fraud determination
If vendor fraud is suspected, a dispute agent can start a task to further investigate.
- ▶ Customer fraud determination
If customer fraud is suspected, a dispute agent can start a task to further investigate.
- ▶ Process charge back
If a charge back is authorized, the system automatically starts a task to process the charge back.

Roles

A case is handled by multiple users performing various tasks. These users can be grouped into roles with specific user responsibilities. Roles describe how groups of users interact within the solution and where they are involved in the life cycle of a case.

For the sample credit card dispute use case, we identified the following roles:

- ▶ Customer service representative
The customer first talks with the customer service representative. The customer service representative opens a dispute case. When the case is settled, the customer service representative communicates the settlement outcome with the customer.
- ▶ Dispute agent
The dispute agent is responsible for reviewing and settling the case. The dispute agent assess all documents received related to the case and determines how to process them. The dispute agent decides whether there are indications of fraud and if further investigation is required.

- ▶ Data analyst
In cases where vendor fraud is suspected, the data analyst analyzes the transactions related to this vendor to detect any patterns that indicate a vendor fraud.
- ▶ Dispute supervisor
If any special handling is required, the dispute supervisor makes the final decision on how to proceed with the case.
- ▶ Business analyst
If requested by the dispute supervisor, the business analyst assesses whether the solution needs to be changed to support handling special cases.
- ▶ Fraud investigator
When fraud is suspected, the fraud investigator works on the case and decides how to proceed.

Although not a role in the solution, the subject of the credit card dispute is the customer. The customer initiates the credit card dispute case. The customer also sends or faxes in the requested documents. After the dispute is settled, the customer is informed about the outcome. The subject, in this example the customer, is not a role because it is an entity outside the organization that does not get work assignments.

Rules

Business rules define under which preconditions certain actions can be performed. For example, you can create rules that specify when a task is started automatically or when it can be started by a user working on the case.

For the sample credit card dispute use case, we identified the following rules:

- ▶ The task that decides how to settle the dispute is started automatically after the customer has sent in the supporting documents.
- ▶ The dispute agent decides whether a charge back to the customer must be initiated.
- ▶ If a task that handles the vendor fraud determination is started, you cannot start the customer fraud determination task, and vice versa.

3.2.2 Covering all aspects of the requirements

When assessing the results of the requirements gathering phase, make sure all aspects of the solution have been covered. Depending on what approach was used, there might be a focus on certain aspects of the solution that results in neglecting to fully describe other aspects of the solution. If gaps are identified,

you must analyze the missing aspects together with the business stakeholders during the solution design sessions. Keep the following pointers in mind to avoid common design mistakes:

- ▶ Do not look at information only from the process point of view.

If the requirements analysis follows the conventional business process management (BPM) approach and focuses mainly on the processes, you most likely will not fully analyze the *content* aspect of the solution. People only consider content when it is directly associated with well defined processes. Therefore, individuals might neglect additional information added to the case such as unsolicited documents the client submits. This information is also important for managing the case. Make sure to assess all possible, relevant information to handle the case.

- ▶ Do not look at information only from user controlled tasks.

If the requirements analysis is focused on the user controlled tasks, you might miss process parts that can be fully automated. A case management solution allows flexible task-based work, and at the same time allows you to seamlessly trigger well-defined and structured BPM processes. You must identify these process parts in the solution design phase to implement them accordingly and gain the most value from the solution. Let the process engine of the case management solution control the structured parts of the process. The knowledge user can then focus on spending more time on tasks where input is required.

- ▶ Do not look at information only from content point of view.

If the requirements analysis focused only on content, but it is not related to the tasks required to gather or create the content, it becomes difficult to acquire that content. Make sure to define these tasks and to describe the relation to the content. Defining these content related tasks ensures the case management solution provides the correct information in the right context for the case worker.

The subsequent sections discuss the approach to clarify the open points from the preceding requirements gathering phase.

3.3 Clarifying results of the requirements phase

After requirements have been collected and organized, it is a good practice to validate and clarify the requirements with the shareholders. The team checks if they have enough information to start mapping the requirements to the solution artifacts. Doing this in joint sessions allows you to quickly clarify questions and validate the chosen solution approach. A good starting point for these first

solution design sessions is to summarize the overall goal the business stakeholders want to achieve.

When running the design sessions, it makes a difference whether the participants already work with a similar system to support their case management work, or if they work on paper using only minimal system support. The level of a team's experience with a case management solution affects how much effort is required for the solution design sessions.

All participants need to have a common understanding about what effect design decisions have for the resulting solution. Make sure all participants use the same terminology. One deliverable in the solution design phase should be a glossary defining the terminology used for the solution design.

Key for a solid solution design is the guidance of an experienced consultant. This consultant needs to have a good understanding of the concepts of the case management solution. Ideally, the consultant should have gone through the complete life cycle of one or more solution implementations. This experience allows the consultant to explain the concepts, steer the discussions, and help drive decisions where needed. Based on previous experience, the consultant can give guidance and propose best practices where multiple options are available. The consultant also has to check the solution for consistency and point out where requirements might make no sense and other ways to handle a case might be more efficient.

3.4 Describing the artifacts of a case management solution

This section describes the artifacts requiring definitions when implementing a case management solution. During the solution design phase you need to map the real world objects identified in the business requirements to the appropriate solution artifacts.

Before describing the various artifacts of the solution in more detail, we compare the case management solution design approach with the design approach for a BPM application. This comparison helps people already familiar with designing BPM solutions understand the major differences defining artifacts for these two types of solutions.

3.4.1 Comparing the case management and BPM design approaches

When designing BPM applications, the solution design usually starts by analyzing the processes and trying to describe them for the implementation in the BPM system.

A common approach is to start defining the process flow without taking exceptions into account. This approach describes the sequence of steps in an ideal scenario where the work can be processed following a well defined predictable sequence of steps.

In reality, a significant percentage of cases do not allow completion following such an ideally defined sequence. External events can cause exceptions. These events add additional information to the case the knowledge worker has to take into account. The additional information might require the knowledge worker to execute steps that were not foreseen in the process definition. The challenge for a BPM solution design is to predict all possible exceptions and include optional routes to handle such exceptions.

The BPM approach results in the solution design focusing exclusively on the process definition. You are dragged into discussions about the steps required for the task at an early stage in the solution design phase. Experience shows this often distracts the team from getting the required overall view of the solution. They do not spend enough time analyzing what has to be done and what information is required to do it.

For a case management solution, it is not required to exactly describe the complete end-to-end process. You only need to define single process fragments - the tasks. When and why the tasks are actually executed can be controlled either by system rules or by the knowledge worker. The system rules can be defined separately later in the solution design process. If it is the responsibility of the knowledge worker to start the task, no rules for this have to be included in the solution design.

When first assessing the artifacts of a case management solution, compile a list of the required tasks. This can be done without having to define how and by whom these tasks have to be accomplished. For example, instead of stating what exact steps have to be run to investigate fraud, who has to work on a specific step, and how often it can be started, it is sufficient to define that there needs to be a fraud determination task.

After this is done, assess how the task execution needs to be coordinated. Tasks can be configured as follows:

- ▶ Start automatically or manual.
- ▶ Required to run before a case can be closed.

- ▶ Grouped in inclusive task groups so all of the tasks in the group have to be run before the case can be closed.
- ▶ Grouped in exclusive task groups so only one of the tasks in the group can be run.

If there is no rule for when to run a certain task, it is defined as optional. The case worker manually creates this task if needed. This can be, for example, an escalation required for exception handling. In this approach knowledge workers can control how to handle unexpected situations.

The handling of exceptions is one of the main differences between a BPM and a case management solution. The knowledge worker, not the system, has control of managing the overall case. The case management solution makes the information required to take appropriate decisions available to the knowledge worker. Information can be unstructured content such as example documents, or structured data such as case properties or task properties. The knowledge worker is orchestrating the tasks with the help of the information provided. See Figure 3-1.

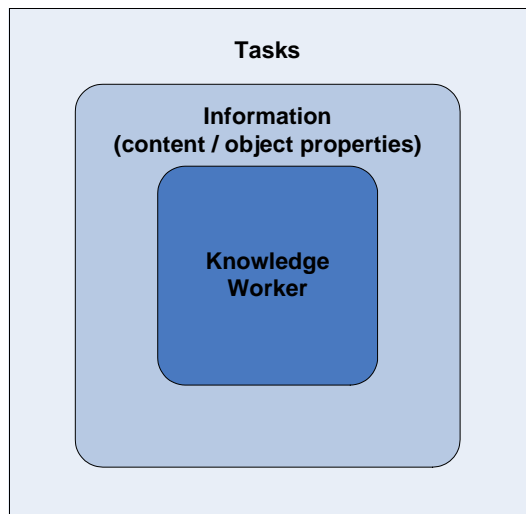


Figure 3-1 Knowledge worker, information and tasks

After a task is started, the process fragment defined for this task controls the participant assignment to the task steps. Following the case management task paradigm, most tasks consist of a sequence of a few user interactive steps. Participants can include the user managing the case and additional participants whose input is required to work on the case.

Although most case management tasks are broken down into such process fragments, other tasks require the use of a well defined process. A typical use case would be the knowledge worker first gathers the required information and then makes the decision on how to settle the case. This sequence of activities is an unstructured process driven by the knowledge worker.

After a decision has been reached, a resulting action has to be executed. The flow of work can involve a structured sequence of steps like going through a defined approval process, updating multiple external systems, and automatically communicating the decision to a client. The case management solution can define and trigger such structured processes following the BPM paradigm. The BPM process engine in that case takes control of the process flow.

The list of the tasks required for a case management solution typically changes quickly. Organizations have to constantly adapt to changing environments when handling cases. As a result, while working with the system, the knowledge users will identify additional reoccurring tasks. New tasks can be added to the repository of tasks for a certain case type without having to change existing tasks. This ability makes the case management solution more flexible compared to a BPM application where any additional task requires incorporating changes into the existing process definition. See 3.4.5, “Tasks” on page 43 for more details on how to define the type of tasks for a case management solution.

3.4.2 Basic artifacts

When defining the scope of the case management solution, you identify the real world objects in need of implementation. These objects need to be translated into the artifacts of the solution.

Typically, defining the final list of all relevant real world objects is an iterative process. After you have assessed the complete set of requirements, you have an idea of what objects are relevant for your solution. When detailing the definition of the various artifacts, validate whether the correct objects have been identified. While doing this, refine and readjust the model if necessary.

Not all real world objects associated to the case need to be implemented. In the solution design, you have to decide what needs to be part of the case management solution. This depends on what aspects of the case work the system needs to support.

The following describes the types of basic artifacts a case management solution consists of:

► Case types

A base artifact definition for the solution is the case type. Case types define the categories of cases the solution is dealing with. Case types are characterized by a defined set of structured metadata, unstructured content, and tasks.

For each case type you have to define what triggers the creation of cases for this type. A case can either be created manually by a user, or the system creates it automatically. The automatic creation of a case can be, for example, triggered by the creation of a document or the filing of a document in a specific folder.

In the sample credit card dispute use case solution implementation, we implement the following single case type:

- Credit card dispute

In the sample use case, the case is created manually by the customer services representative when a customer calls and starts a dispute.

► Tasks

Tasks are associated with case types. It is sufficient to first list the required tasks for the case types and to briefly define what each task is for. The task implementation is defined in a separate step. See 3.4.5, “Tasks” on page 43.

For the sample credit card dispute solution implementation, the following tasks need to be implemented for the credit card dispute case type:

- Send confirmation letter and request documents.
- Manage credit card dispute.
- Customer fraud determination.
- Vendor fraud determination.
- Process chargeback.

► Roles

Roles describe how participants interact with the case management solution. When defining the task implementation, you map roles to the separate steps of the task. You can also use roles to define how work is presented to users. Based on the role, you configure what attributes to show and how to filter or sort the inbasket.

For the sample credit card dispute use case solution implementation, the following roles are used:

- Customer

- Customer service
- Dispute agent
- Dispute supervisor
- Data analyst
- Business analyst
- Fraud investigator
- Document types

Document types are used to define the content categories. The document types allow the assignment of separate sets of metadata properties to each type. Document types describe the unstructured content the case management users deal with to accomplish their work. In a first step you list the document types used in the case management solution.

For the sample credit card dispute solution we use the following document type:

 - Customer correspondence

Having decided what case types, tasks, roles, and document types are required allows for further detailing the artifacts in the next step of the solution design.

3.4.3 Data model

You have to define the data model for the solution. This definition is done by identifying the structured content represented by the properties used for the solution. These properties are associated to various artifacts of the solution. Certain properties are assigned to all artifacts, and others only to specific ones.

To make sure you specify a consistent data model for the solution, make sure to maintain one single model for the solution. The properties defined in the data model are used for the following artifacts of the case management solutions:

- Case types

Case type properties represent the structured case data and are shown in the case detail view and case summary view of the case instances.
- Document types

Document type properties represent the structured documents' metadata.
- Task steps

Properties are assigned to the various steps of the task. The step properties are shown when displaying the step details after opening a task from an inbasket.

- ▶ Inbaskets

Inbaskets are used to present the tasks assigned to a specific user or a role. When defining the inbaskets, you select properties displayed when listing the inbasket items.

For each property the following additional information has to be provided:

- ▶ Data type (string, boolean, date-time, float, or integer)
- ▶ Single value / multiple value

Optionally, the following information can be provided for a property:

- ▶ Maximum length (string) or minimum/maximum value (integer)
- ▶ Default value
- ▶ Choice list (integer and string)

After the basic entities of the case management solution and the data model have been defined, these are now tied together. You assign properties to the identified artifacts and define in which views of the application the properties are used. You also need to define the layout used in the solution to present the properties in the user interface.

For the sample credit card dispute solution, the following properties are required. These properties are used for the credit card dispute case, the customer correspondence document type, and all task steps:

- ▶ Credit card number (string)
- ▶ Statement ID (string)
- ▶ Transaction ID (string)
- ▶ Date dispute is received (date and time)
- ▶ Disputed amount (float)
- ▶ Dispute status (string with choice list)
- ▶ Chargeback processed? (boolean)

Tip for sort properties: In our example here, we use string for Dispute status. From best practice perspective, if you want to sort your data by the property, it is better to use *integer* type instead. This is because you can easily sort your data any way you want by assigning it with an appropriate integer value. From the user interface perspective, you can mask the integer value with the meaningful words

For example:

- ▶ You can assign various status with the integer values as follows:
Prepared - 0, Investigated - 1, Reviewed - 2, Rejected - 3, Approved - 4
- ▶ You can assign various priorities with the integer values as follows:
Top Secret - 1, Secret - 2, Confidential - 3, Normal - 4

3.4.4 Case content structure

The case management solution displays case documents using a hierarchical folder structure. You have to define this structure for each of the case types used in the case management solution. The content structure helps the knowledge worker visualize the case information. The goal is to ensure users can quickly access the information they need for specific tasks.

The sample credit card dispute solution uses a single folder to file all the associated documents. The following folder is used:

- ▶ Customer correspondence

3.4.5 Tasks

The tasks defined for the various case types need to be implemented. Tasks in a case management solution in most cases consist of small user-interactive process fragments. Nevertheless, the case management solution does not limit you to exclusively use this type of task. You can also allow complex end-to-end BPM processes to automatically execute process steps or even entire processes.

Often, there is no clear distinction between these two concepts of implementing a task. The case management solution supports both types of process implementations.

Process fragments

You can define the process fragments for separate tasks in isolation. Each process fragment has a well defined start and end. At the time when you define the process fragment for a single task, you can concentrate on the required

outcome of that specific task without having to define what event triggers the task.

This approach leads to much leaner process maps compared to BPM end-to-end processes. When implementing a task as a process fragment, you are only using a limited set of process modeling components. Therefore you have to decide if modeling the processes using a standard process notation such as Business Process Modeling Notation (BPMN) or event-driven process chain (EPC) makes sense for your implementation.

Following an agile development approach, you can instead define the required steps for the task directly in the design tool of the case management solution. This approach speeds up the solution design and allows you to immediately work with a prototype of the task implementation in a development environment.

In any case, you have to break each task into the steps required to complete that task. Each step has to be assigned to either a role or to one or more participants. When assigning a step to a participant, you assign it to a workgroup variable instead of a named user. This workgroup is then populated with the actual user or users at run time.

The steps then have to be connected using routes. If multiple possible subsequent steps can follow a single step, you have to add routing conditions allowing the users to decide the routing based on the response they enter at run time.

For each step of the task, you have to decide what properties to associate with it. The properties can be configured to be read only or editable for that step. Read-only properties are used to provide task specific information for the user. If data has to be altered at a step, the properties need to be editable. Documents can also be created or changed at steps of the task. Changed or added structured and unstructured information is stored in the case management system, making the information available to all participants working with the case. Task results might also affect systems outside the case management solution such as when users manually update other applications while working on a task.

BPM processes

A more complex BPM process consists of more than user interactive steps and simple routing. Complex BPM processes implement a well defined and predictable business process and typically contain fully automated steps. These steps are included in the process map by implementing system steps and adding appropriate routing rules between user interactive and system steps. Tasks in a case management solution also can be implemented as fully or partially automated BPM processes.

A BPM process requires implementing a more elaborate exception handling mechanism not needed for process fragments. In this case, it is not the knowledge worker owning the case who controls the overall process initiating the exception handling. Exception handling has to be included at design time to ensuring that the process can be executed successfully.

The more complex process model for this type of task justifies spending more time analyzing and modeling the process before implementation. With the help of a process model, you can validate your process definition ensuring an efficient process implementation maximizing throughput for this task.

For the sample credit card dispute solution, we implement the following tasks:

- ▶ Send confirmation letter and request receipts
- ▶ Manage dispute
- ▶ Process chargeback
- ▶ Vendor fraud determination
- ▶ Customer fraud determination

Processing the chargeback can be implemented as a fully automated BPM process. Also the task of sending the confirmation letter can be partially automated. All other tasks covered in the use case are implemented as process fragments consisting of user interactive steps.

3.5 Using the iterative implementation approach

Case management solutions have to support processing work in a constantly changing environment. This is the reason why knowledge workers have to be able to control the process of working the cases and have to be able to react to changes. The way the system supports handling the case evolves over time and result in adding tasks or modifying existing tasks. Often this change of requirements will be driven by the knowledge workers using the system.

Requirements do not start changing after the first version of the solution has been released. Even during the analysis and design phase, you have to constantly manage changing requirements.

A waterfall project model clearly separates the design and implementation phases. Completing a solution design in theory does require a lot of experience working with case management solutions. When introducing a new case management solution, the stakeholders working on the solution design typically do not have that experience.

For the reasons mentioned above, using the waterfall project model carries a high risk of not meeting the user expectations. This approach probably will require a significant amount of rework after the application is released for testing. It also increases the likelihood of misunderstandings about how the actual implementation of the system works and how it affects the case workers.

The case management solution design environment allows the consultant to show the stakeholders the implemented artifacts at an early stage of the solution design process. This early implementation allows you to explain how various configuration options and artifact configurations affect the resulting solution. It ensures that from the beginning all stakeholders have a correct understanding of the concepts. In subsequent iterations the implementation is completed and refined using the feedback from the stakeholders.

If iteration cycles are planned accordingly, this approach allows for adjustments to the solution requirements. This approach avoids going to production with a solution built to requirements that have already changed.

Try to identify a simple use case in your solution which covers one case type including the most important data attributes and a few typical tasks. Implement this scenario in the sandbox using the terminology the business uses for attribute names, case types, and task names. This approach allows the business stakeholders to validate whether the solution meets their expectations. The stakeholder feedback enables you to review the solution design and create a next version of the solution for validation. Depending on the timeline and the scope of the solution you can repeat these iterations multiple times. See Figure 3-2.

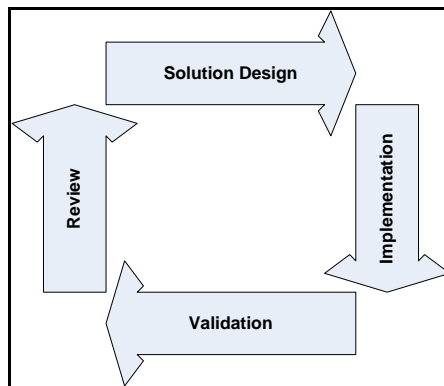


Figure 3-2 Iterative implementation approach

Using templates can help speed up the creation of the first prototype of the solution. Having selected an appropriate template allows you to present a fully functional basic version of the solution at the start of the solution design phase. You can already base the initial design discussions on this existing configuration.

Compared to starting from a blank page, this approach gives the participants in the design phase better insight into how design decisions translate into a working solution. See 3.7, “Using templates” on page 48 for a more detailed discussion of the template concept for a case management solution.

As discussed before, a case management environment typically changes frequently. After having released the first version of the solution into production, the team has to quickly adopt these changes and update the solution in short release cycles. Experience shows when getting started working on a solution, the majority of the time is consumed ensuring everyone uses a common terminology and understands the concepts of the solution. This means any new team member will always require a significant ramp up time. Therefore it is important there is not too much fluctuation in the teams working on subsequent updates of the solution.

3.6 Documenting the results of the design phase

When following the iterative implementation approach, it is possible to input the definition of all the artifacts directly in the design tool of the case management system. See 3.5, “Using the iterative implementation approach” on page 45.

The use of an iterative implementation would not require creating a comprehensive solution design document. Depending on the project setup, it can still be useful to provide such a documentation for one of the following reasons:

- ▶ The solution needs to be discussed with stakeholders who do not have access to the system. These stakeholders also need to sign off on the solution design. They need an offline version of the solution design distributed and edited using standard office tools such as spreadsheet editors and word processors.
- ▶ The expected results have to be clearly documented before doing the actual implementation. The scope has to be clearly defined to be able to trace the implementation progress against the plan and define the sign off criteria for a successful implementation. This sign off might be required because of a client-vendor relationship with external vendors or when providing implementation services to a client within the same organization.

Basing the solution implementation on a well documented solution design does not defeat the concept of agile development. The solution design document can be the result of multiple design iterations where you use the agile development approach to validate and improve the results of each iteration.

For a case management solution, the implementation can certainly change during the remaining implementation phase. There can be frequent subsequent

releases following the first release. When providing a stand-alone solution design document, a well defined governance process is required to keep the solution design updated.

3.7 Using templates

When creating a case management solution, you can either create all required artifacts of the solution from scratch or you can base the solution on a solution template. A solution template provides a set of preconfigured artifacts that can significantly facilitate the process of creating a solution. The artifacts of a template can be defined on the same level as the actual solution. The case management system provides mechanisms to manage templates and to instantiate new solutions based on templates.

After the new solution has been created based on the template, this solution instance is no longer linked to the template. Future changes of the template are not applied to this solution. The template mechanism is based on copying the required artifact configurations into the new solution.

There are various scenarios for how templates can be used and the channels of obtaining or providing templates. The following is a discussion of the various sources and uses of templates:

- ▶ Templates are provided by IBM on developerWorks®

These templates are provided for specific vertical solutions. They are meant to facilitate the design and implementation process for a solution. They are not intended to be used as full fledged case management solutions ready for production after a few minor configuration changes. To make use of a template, assess which template is the best fit for the solution. After doing a gap analysis, complete your own development based on these templates.

The first templates planned to be available on developerWorks are the following:

- Credit card dispute (financial services)
- Motor claim (insurance)

- ▶ Templates provided by partners

Partners usually provide more specific solution templates for the vertical industry where they have expertise. Depending on the level of standardization in their area of expertise, they can deliver specialised templates. Ideally such templates only require limited additional custom configurations to implement a first version of a production solution.

- Templates created by your company to be used for the roll-out of solutions to business units within the organization

Businesses want to reuse applications created for their organization in separate business units. These business units often require slight adjustments to the application and the implementation of local or regional modifications. The main pattern for the application remains the same. The use of templates ensures investments in the initial creation of solutions can be leveraged while simultaneously adhering to organizational standards. This approach simplifies the rollout to additional business units and allows defining reusable solution patterns.

3.8 Summary

In this chapter we discussed an approach to design case management solutions. We identified the main steps required to implement the solution.

We explained the artifacts needing definition and discussed the differences between the approaches to do this for a case management solution as compared to a BPM solution.

The way cases need to be handled frequently changes. Therefore an iterative implementation approach significantly helps to ensure deploying changes in time and meeting the user expectation and changing market conditions. We showed how a case management system allows designing solution artifacts using the design tools of the case management system facilitating the iterative implementation approach.

The chapter concluded explaining the options using templates to speed up implementation.



IBM Case Manager overview

IBM Case Manager enables users to manage structured and unstructured processes and content in dynamic, highly collaborative, and flexible ways. Case Manager supports the agile methodology by providing users an environment on which to develop, validate, and test solutions iteratively. Case Manager also supplies a set of tools for moving solutions from a development environment to a production environment.

In this chapter, we provide an architecture overview of IBM Case Manager including the following topics:

- ▶ Case Manager capabilities
- ▶ Introduction to Case Manager
- ▶ Case Manager core components
- ▶ Case Manager optional components
- ▶ Case Manager high level architecture
- ▶ Case Manager topology

Fast path: If you have a working Case Manager environment and you want to start right away, proceed to the following chapter:

- ▶ Chapter 10, “Building a sample solution” on page 279

4.1 Case Manager capabilities

Case Manager provides capabilities for integrating content, processes, and people into a platform for building case management applications. In this section, we cover the various capabilities of Case Manager including content management, business process management, collaboration and social software tools, business rules, and analytics.

Content management

Case Manager provides a complete content management environment. These capabilities include check-in, check-out, major and minor versioning, referential containment, browsing, searching, compound documents, and auditing. This capability is part of the IBM FileNet Business Process Manager component, which is included at no extra cost.

Business process management

Business process management is another capability of Case Manager. This capability enables a solution to have manual, automatic, and user-creatable case-oriented tasks leveraging business process management workflows. This capability is part of the IBM FileNet Business Process Manager component, which is included at no extra cost.

Collaboration and social software tools

The Case Manager product brings the power of collaboration to case management. This capability allows case workers to ask other knowledge workers or experts for advice at real time. This capability is part of the IBM Lotus® Sametime® Entry component, which is included at no extra cost.

Business rules

Case Manager uses the power of a business rules management system (BRMS) to help manage cases intelligently. This integration is possible from within a step of a task. This capability is part of the IBM WebSphere® ILOG® JRules component, which is included at no extra cost.

Analytics

Case Manager offers two types of analytical services: content analytics and case analytics.

Content analytics

Case Manager leverages an included component IBM Content Analytics for text and content analytics. This capability enables knowledge workers to look into the unstructured data within cases and identify statistically significant correlations.

Case analytics

Case Manager provides the ability to analyze information at the case level. This means identifying trends in the processing of cases, not simply at each artifact of a case. This capability is part of the IBM FileNet Business Process Manager component, which is included at no extra cost.

4.2 Introduction to Case Manager

Case Manager is implemented on top of the IBM FileNet P8 platform to simplify the task of creating, deploying, and testing solutions. Case Manager provides these environment, interface, and features:

- ▶ Development environment for business analysts to create and test solutions
- ▶ Run time environment for case workers to process and manage cases
- ▶ A set of Representational State Transfer (REST) application programming interface (API) for communicating between components and for creating custom applications
- ▶ Tools for configuring the Case Manager environment and for migrating solutions from development to production environments
- ▶ Templates to help jump-start solution development

Development environment

The development environment contains the full stack of Case Manager components. In this environment, business analysts can create, test, revise, reset, and retest a solution iteratively until it is ready for deployment in the production environment.

Runtime environment

Case Manager supplies a user interface that is designed to enable case workers to manage and process cases from start to finish. In the runtime environment, case workers can create cases and tasks, manage documents, and process tasks.

Case Manager API

The Case Manager API serves as the integration tier between Case Manager components. For example, at design time, IBM Case Manager Builder (Case Builder) uses the API to fulfill the requests related to deployment of a solution. At run time, Case Manager Client uses the API to create and manipulate cases and tasks. Custom applications can use the Case Manager API within custom widgets for the Case Manager Client or a new user interface.

Tools

Case Manager provides two tools: IBM Case Manager Administration Client (CMAC) and FileNet P8 Deployment Manager (FDM). CMAC is used for configuring the Case Manager environment. Users can also use both tools for deploying solutions from a development environment to a production environment. FCM is used to deploy application data from one P8 domain to another. In ICM, FDM is used to move solution package from a development environment to another development environment or to a production environment.

Templates

Templates help organizations to jump-start the process of developing solutions. developerWorks contains a set of templates for several lines of business applications and the Solution Assistant, a tool to support the copying of solutions, and the creation and use of solution templates.

4.3 Case Manager core components

Case Manager core components allow business analysts to create and test solutions. The core components allow case workers to process cases. Case Manager includes the following core components:

- ▶ IBM Case Manager Builder (Case Manager Builder)
- ▶ IBM Case Manager Client and Lotus Mashups
- ▶ IBM Case Manager API
- ▶ IBM Case Manager Administration Client
- ▶ FileNet P8 Content Engine
- ▶ FileNet P8 Process Engine
- ▶ FileNet P8 Workplace XT

In this section, we discuss each of these components.

4.3.1 Case Manager Builder

IBM Case Manager Builder allows business analysts to create and build case management solutions. Case Manager Builder simplifies the design and building of case solutions. It is based on Dojo technology.

Using Case Manager Builder, business analysts can define property types, document types, case types, task types, and processes associated with task types for a solution. They can also design, deploy, and test case management solutions in a development environment iteratively. Typically, Case Manager Builder is available only in the development environment.

Figure 4-1 shows the Case Manager Builder home page users see after logging into Case Manager Builder. This page lists all available solutions in the design object store and their deployment status inside the development domain.

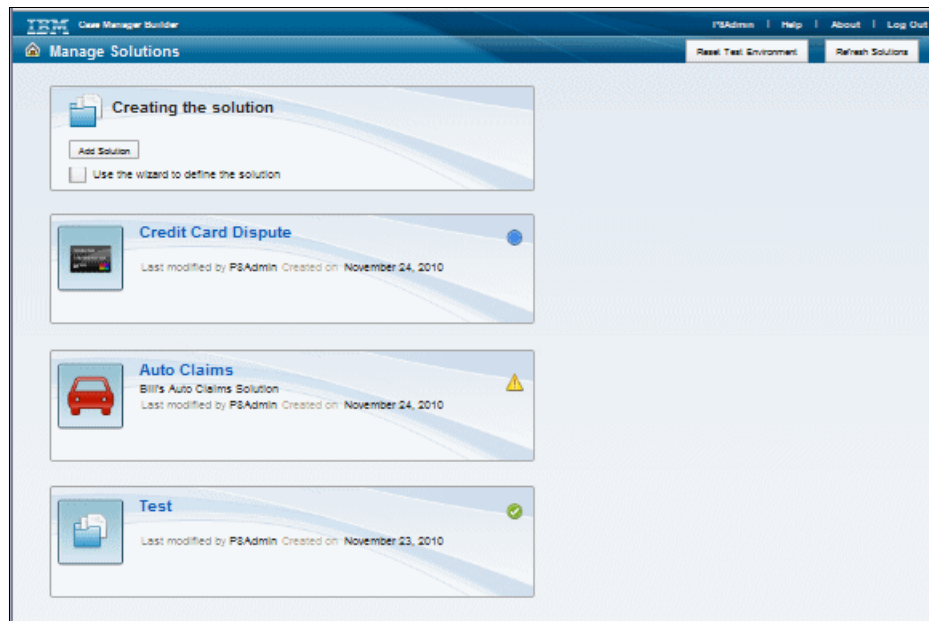


Figure 4-1 Case Manager Builder home page

4.3.2 Case Manager Client and Lotus Mashups

Case Manager Client is a Lotus Mashups-iWidget-based application. Case Manager Client is an environment on which business analysts create and customize solution layouts. It is also an environment on which case workers can collaborate and process cases.

Case Manager Client is based on IBM Dojo and iWidget technology. The client integrates the Lotus OneUI look and feel. Case Manager Client integrates with the IBM Lotus Sametime LiveName API for Sametime awareness and web chat capability to support case processing collaboration.

Figure 4-2 shows a solution space for a Claim Management solution.

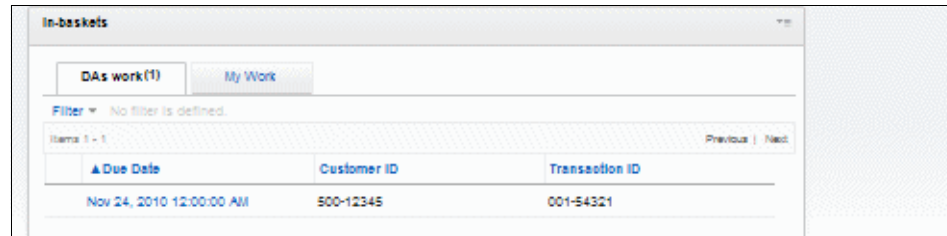


Figure 4-2 IBM Case Manager Client for Claim Management solution

Case Manager Client comes with a default set of spaces and pages. When users deploy a solution, the Case Manager API creates the default spaces and pages for the solution. Users can then customize the default pages and create new custom pages for the solution. For information about spaces and pages, see 5.1, “IBM Case Manager case object model” on page 80 and 5.2, “Case object model implementation” on page 102.

4.3.3 Case Manager API

The Case Manager API consists of three REST-based APIs: Content Management Interoperability Services (CMIS), PE REST, and Case REST. The Case Manager API provides an integration between the IBM Case Manager application components and the underlying IBM FileNet engines.

The Case Manager API has a full set of APIs for users to build custom applications on top of Case Manager. For details on the CMIS and PE REST APIs, consult the FileNet P8 documentation.

The Case REST API supports the REST architecture style. The Case REST API uses the Process Engine (PE) Java™ API and the Content Engine (CE) Java API to handle case solution requests from the IBM Case Manager components, notably those from Case Manager Builder and Case Manager Client.

Below is the partial list of the Case Manager API capabilities:

- ▶ Deploy a solution.
- ▶ Get a solution deployment status, detailed log, and error log.
- ▶ Create and search for a case.

- ▶ Create comments for a case or a document.
- ▶ Create a discretionary task and launch a workflow.
- ▶ Enable and disable a task.
- ▶ Get task history for a case.
- ▶ Get a list of work items for a basket
- ▶ Open, update, and complete a work item

For a full listing of the Case Manager API, see the IBM Case Manager documentation.

4.3.4 Case Manager Administration Client

Case Manager Administration Client (CMAC) is a tool for configuring the IBM Case Manager environment. Using CMAC, users can also deploy solutions to a production environment after the solution is migrated from the design object store of the development environment to the design object store of the production environment. CMAC organizes the related task to profiles.

CMAC supports the following profiles:

- ▶ Case Manager Builder profile

This profile contains the tasks for setting up development environment. It is used to deploy Case Manager Builder and Case Manager API web applications to a WebSphere Application Server (WAS) profile. It is used to prepare design and target object stores with all the requirements for the development and deployment of solutions in a test environment.

This profile contains several tasks used for both development and production environment such as configuring login modules, configuring LDAP, importing LTPA keys, and so forth.

- ▶ Case Manager Client profile

This profile has tasks for deploying and configuring Case Manager Client.

- ▶ Deploy profile

This profile includes tasks for administrating an IBM Case Manager installation in a production environment including deploying solutions to a production environment.

Figure 4-3 on page 58 shows the user interface for the “Configure development environment” task in the “Case Manager Builder” profile.

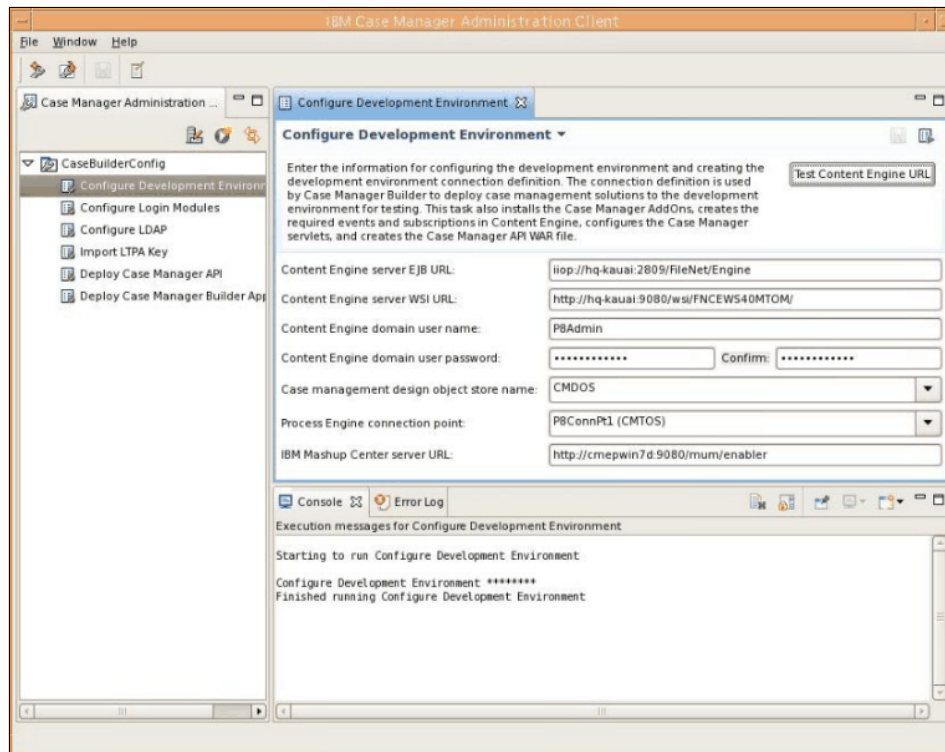


Figure 4-3 Case Manager Administration Client for Case Manager Builder profile

4.3.5 P8 Content Engine

P8 Content Engine (CE) implements the following features to support IBM Case Manager:

- ▶ Task

The task class is a P8 CE base class. An instance of the Task class represents a piece of work in a case.

- ▶ Content activity monitoring

Content activity monitoring is an extension of the CE auditing framework enabling the monitoring and analysis of property changes.

- ▶ Case object model

The CE case object model provides addons for the design and target object store metadata, code modules, and subscriptions for handling events from cases.

- ▶ WebSphere Process Server integration

CE provides integration between IBM Case Manager and WebSphere Process Server.

In addition, IBM Case Manager uses P8 CE to manage solution artifacts, solution metadata, and case instances.

4.3.6 P8 Process Engine

P8 PE supports IBM Case Manager in two areas:

- ▶ Design

P8 PE enhances the PE Java API to:

- Support workflow authoring in Case Manager Builder.
- Support offline validation of workflows in Case Manager Builder.
- Support round trip authoring of workflows using both P8 PE Process Designer and Case Manager Builder. Round trip authoring means the business analysts can model a business process using Case Manager Builder and augment it in PE Process Designer. The business analysts can repeat this process as many times as needed.

- ▶ Runtime

IBM Case Manager uses P8 PE to process work items for a task associated with a case instance. PE provides the capability to retrieve, manipulate, and update case instance properties using the execution of work items.

4.3.7 P8 Workplace XT

P8 Workplace XT provides a user interface to IBM FileNet P8 Content Manager and process applets.

IBM Case Manager has a dependency on Workplace XT for the following:

- ▶ Common windows to allow users to add documents and subfolders to cases and attachments to tasks
- ▶ Hosting the Case eForm widget service
- ▶ Hosting Process Designer to support the workflow round trip feature between the PE and Case Manager Builder

4.4 Case Manager optional components

The following components are bundled and integrated with IBM Case Manager (along with the P8 BPM Platform, which includes FileNet eForms, among other capabilities) and IBM Business Process Manager:

- ▶ Case Analyzer
- ▶ Cognos® Real Time Monitoring
- ▶ IBM Content Analytics
- ▶ WebSphere ILOG jRules
- ▶ Lotus Sametime

Although these components are integrated with Case Manager, they are not required for implementation or use. However, they can add great value to Case Manager solutions.

Note: Cognos Real Time Monitoring, Content Analytics, WebSphere ILOG jRules, and Lotus Sametime are licensed on a limited use basis.

Although Cognos BI is not included, Case Analytics reports can be loaded and viewed in the Cognos BI report studio.

WebSphere Process Server and WebSphere Integration Developer are integrated with Case Manager but are not bundled with the product.

Case Analyzer

Case Analyzer is in the IBM Business Process Manager bundle. Case Analyzer integrates with Cognos Real Time Monitor and Cognos Business Intelligence (BI) to generate real-time and historical data reports for case events based on CE and PE events. Case Analyzer is the enhancement of P8 Process Analyzer to support IBM Case Manager.

Cognos Real Time Monitoring

Cognos Real Time Monitoring is in the IBM Business Process Manager bundle. It is the tool for users to monitor and perform trend analysis for case data. Cognos Real Time Monitoring is the enhancement of P8 Business Activity Monitor to support IBM Case Manager.

IBM Content Analytics

IBM Content Analytics supports crawling for cases and unstructured data. Content Analytics contains a crawler for mining case data for analysis and for finding document content related to case data.

WebSphere iLog jRules

IBM Case Manager integrates with WebSphere iLog jRules to manage complex rules for processing cases.

eForms

eForms provides IBM FileNet P8 electronic form functionality in IBM FileNet P8 Workplace or WorkplaceXT. Users deploy eForms as part of the Workplace XT add-on.

IBM Case Manager provides eForm integration allowing the capture of user data from a form and the transfer of the data to case instances through case properties.

Lotus Sametime

Using Lotus Sametime, case workers can collaborate while processing cases, including passing case-related information to each other.

WebSphere Process Server and WebSphere Integration Developer

WebSphere Process Server (WPS) allows the invocation of WPS processes from IBM Case Manager tasks to support process orchestration between IBM Case Manager and WPS using WebSphere Integration Developer (WID) external services.

4.5 Case Manager high level architecture

Figure 4-4 on page 62 shows the high-level design architecture for IBM Case Manager.

In this section, we discuss the interaction between the IBM Case Manager components in the diagram shown in Figure 4-4 on page 62. Specifically, we discuss the protocols, communication data, and artifacts for the following:

- ▶ Case Manager Builder
- ▶ Case Manager Client
- ▶ Case Manager API
- ▶ Content Engine
- ▶ Process Engine
- ▶ WebSphere Process Server

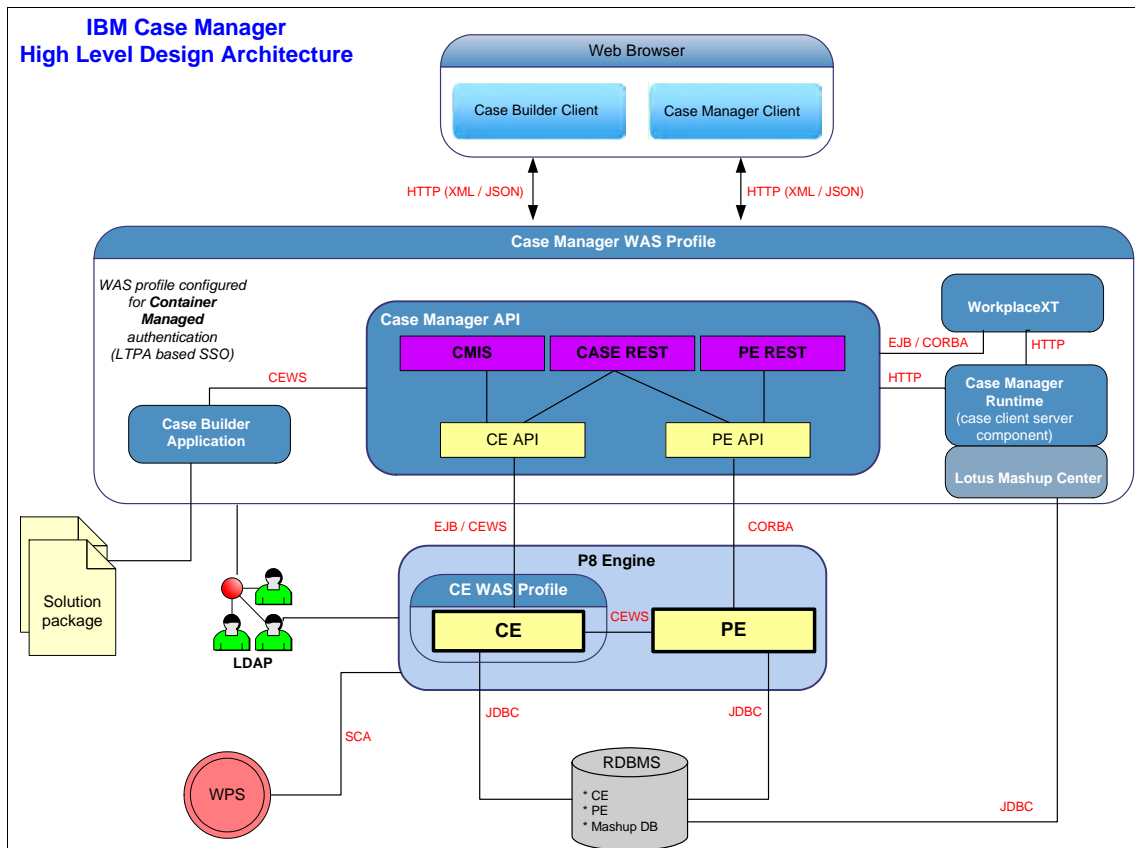


Figure 4-4 IBM Case Manager high level architecture

4.5.1 Case Manager Builder

Case Manager Builder contains two components: Case Manager Builder Client (Case Manager Builder UI) and Case Manager Builder Application (Case Manager Builder servlets or Case Manager Builder server backend).

Case Manager Builder communicates with the Case Manager API using HTTP. The Case Manager API returns to Case Manager Builder a HTTP response with a JavaScript Object Notation (JSON) payload. In addition, Case Manager Builder creates solution packages using Content Engine Java API using the Content Engine Web Services (CEWS) transport. See “Solution package” on page 82 for more information.

4.5.2 Case Manager Client

Case Manager Client has two main components: the client (UI) and the server backend. Case Manager Client is built on top of Lotus Mashups using iWidget standards.

Case Manager Client sends the Case Manager API HTTP requests. The client accepts HTTP responses with JSON and XML payloads from the Case Manager API.

Case Manager Client uses the Case Manager API to create and process cases. The case data is persisted in CE content database. The task data is stored in the PE database. In the IBM Case Manager environment, Content Engine and Process Engine data is collocated in a single database but in separate tablespaces.

4.5.3 Case Manager API

The Case Manager API has three REST APIs: CMIS, PE REST, and Case REST. These APIs were developed using the REST architecture style and utilizing the Content Engine and PE Java APIs.

CMIS API accepts HTTP requests from Case Manager Client. CMIS API connects to Content Engine using the IIOP protocol to perform operations for the requests. CMIS API then sends HTTP responses with XML payloads to the Case Manager Client with the result.

PE REST API accepts HTTP requests from Case Manager Client. PE REST API connects to Process Engine using the IIOP protocol to perform Process Engine operations. PE REST API communicates the result to Case Manager Client using HTTP responses with JSON payloads.

Case REST API accepts HTTP requests from both Case Manager Builder and Case Manager Client. Case REST API responds to Case Manager Builder and Case Manager Client requests using HTTP responses with JSON payloads. Depending on the requests, the Case REST API connects to Content Engine, Process Engine, or both to perform the operations required by the requests. Case REST uses IIOP to connect to both Content Engine and Process Engine.

Case REST API creates and maintains numerous artifacts in the design object store and target object store. For more information about the object stores and their artifacts, see 5.2, “Case object model implementation” on page 102.

Case REST API also creates Process Engine metadata by transferring PE configuration and PE workflow definition files to a Process Engine region when Case REST API deploys a solution.

4.5.4 Content Engine

Content Engine (CE) accepts both HTTP and IIOP requests from its clients. Content Engine connects to database storage using JDBC and other storage using NFS to persist data for IBM Case Manager. Content Engine leverages JAAS for user authentication. IBM Case Manager leverages Content Engine to store solution artifacts, solution metadata, and cases.

4.5.5 Process Engine

Process Engine (PE) processes HTTP and IIOP requests. Process Engine responds with a JSON payload. Process Engine communicates with Content Engine using HTTP, Content Engine Web Services Interface (CEWS). Process Engine communicates with the Process Engine database using the JDBC protocol. Process Engine retrieves and updates case data during processing of the work objects associated with a case task. IBM Case Manager leverages Process Engine to store process metadata and work items.

4.5.6 WebSphere Process Server

WebSphere Process Server (WPS) communicates with the P8 engines (Content Engine and Process Engine) using web services through WID. A task segment in IBM Case Manager is mapped to a WPS process. Using WPS integration, users can execute business processes in WPS from an IBM Case Manager task invocation.

4.6 Case Manager topology

IBM Case Manager depends on the IBM FileNet P8 5.0 platform for content and process management. This core platform consists of the Content Engine (CE) and Process Engine (PE). The IBM FileNet P8 5.0 platform can be extended to include the Case Manager native case object model. Customers must install and configure a standard distributed IBM FileNet P8 Platform environment before deploying IBM Case Manager. Optionally, existing P8 environments can be upgraded to version 5.0 to be used with Case Manager. P8 Content Search Services or Content Search Engine can be included if content based searching (also known as full-text search) is required. The configurations described in this

chapter are core platform examples only. The cross brand integrations and optional Case Manager components described in 4.3, “Case Manager core components” on page 54 are not shown in the example configurations. For additional information about other supported Case Manager configurations, navigate to the following URL:

<http://publib.boulder.ibm.com/infocenter/casemgmt/v5r0m0/index.jsp>

This section describes three types of Case Manager environments:

- ▶ Case Manager development environment
- ▶ Case Manager production environment with high availability
- ▶ Case Manager production environment with high availability and solution partitioning

Case Manager runs on top of the P8 5.0 CE and PE core services layer. With the exception of the Lotus Mashup database, Case Manager itself does not contain any process or content data. Rather, Case Manager is an integration layer supported by a core P8 services layer.

Figure 4-5 on page 66 shows the basic Case Manager building blocks.

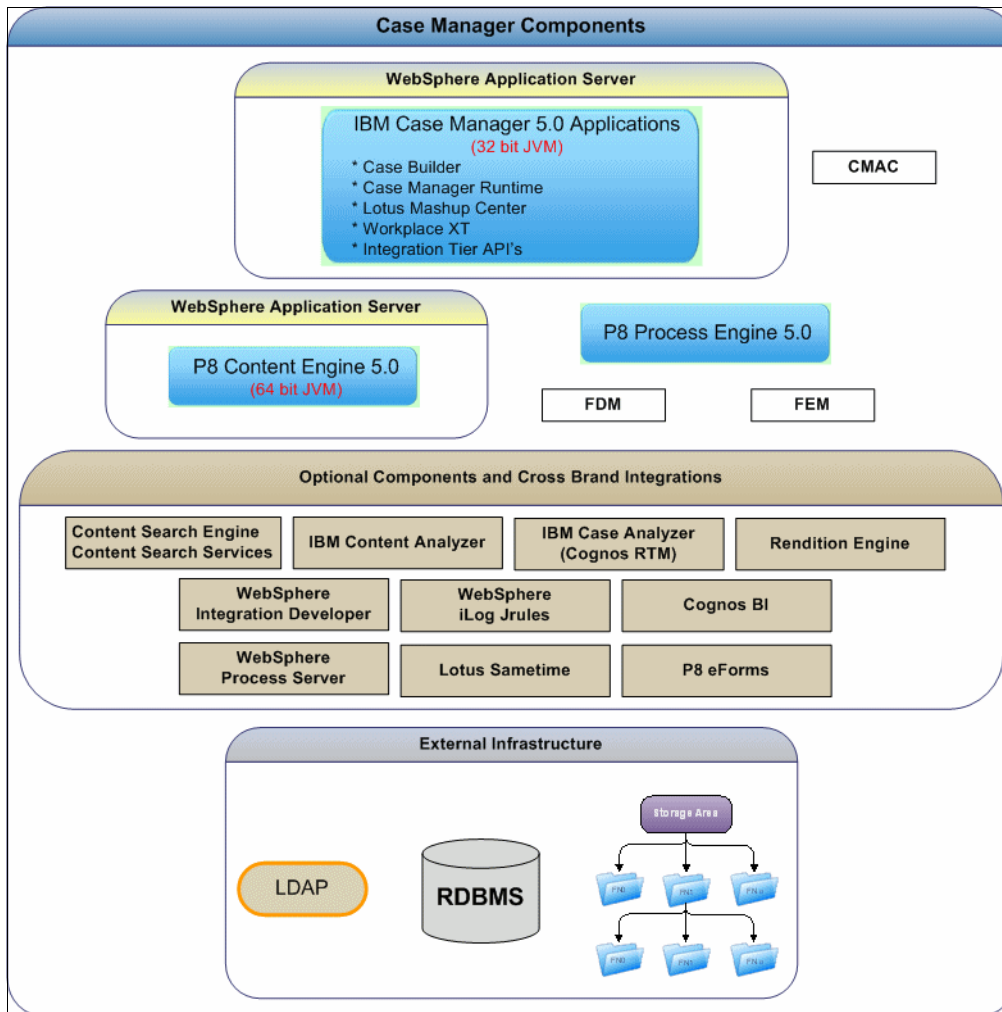


Figure 4-5 Overview of Case Manager Components

Note: At the time of writing, the Lotus Mashup Center (“Lotus Mashups”) does not run in a 64-bit WebSphere JVM. Therefore, the Case Manager WAS profile must run in a 32-bit JVM profile. The Content Engine can either run inside the Case Manager WAS profile or it can run in a separate profile (64 or 32 bit).

All of the data related to Case Manager solutions are stored in the Process and Content Engine repositories. The Lotus Mashup Center 3.0 configuration data is stored in a separate database. This database can also be collocated with the Content Engine and Process Engine database.

If you are familiar with the various deployment options for the IBM FileNet P8 platform, you can extend these concepts to IBM Case Manager production deployments as well. The following P8 implementations are what Case Manager is build upon, and are transparent to Case Manager:

- ▶ Supported CE and PE high availability configurations, including supporting database server technologies such as DB2® HADR.

Note: Unlike production and other highly available target environments, CE farms are not supported in Case Manager development environments. Case Manager must follow the same rules as other P8 application that extend the metadata. Due to CE metadata cache behavior, these applications must utilize a direct connection to a designated CE. For example, the “reset development” task within the Case Manager Builder application reinitializes target Object Stores and therefore requires a direct connection to a single Content Engine instance. Running this task against a highly available Content Engine server WSI URL is not supported.

- ▶ CE content storage area options
- ▶ IBM Content Search Services and Content Search Engine (Autonomy K2)
- ▶ P8 domain partitioning and distributed deployments
- ▶ P8 disaster recovery strategies
- ▶ P8 performance tuning parameters and guidelines
- ▶ Supported virtualization platforms for P8

For more information about these topics, see existing product documentation and related IBM RedBooks publications such as IBM FileNet P8 5.0 Version Information Center and IBM High Availability Solution for IBM FileNet P8 System.

Case Manager environments consist of a development P8 Domain, and one or more production P8 Domains. The development Domain is where the Case Manager Builder application resides and where the solution design process takes place.

Solutions in the process of being created reside in the Case Manager design object store (CMDOS). The term *sandbox* is used to describe the development domain consisting of the Case Manager target object store (CMTOS) and the associated Process Engine isolated region.

Case Manager Builder is used to build solutions, initiate development deployments, and reset the sandbox target object store and region. Case Manager solutions are designed and tested in this environment before being deployed to pre-production and production environments.

After a solution is tested and ready to be used, FileNet Deployment Manager (FDM) is used to transfer the solution package from the development domain to a second development domain or targeted production domains, such as a pre-production test environment or production environment.

FDM transfers the solution to the Case Manager design object store (CMDOS) in the target domain. After the solution has been transferred, the Case Manager Administration Client (CMAC) is used to deploy the solution from the production domain CMDOS to one or more CMTOS target(s).

Figure 4-6 on page 69 shows the flow of Case Manager solutions from a development P8 Domain to a production P8 Domain. In this example, two target object stores are shown in the production domain. Both have been named “CMTOS”, but the name is user definable. If the target object stores reside in the same P8 domain, the names must be unique. The high level steps shown in Figure 4-6 on page 69 are as follows:

1. Case Manager Builder creates and deploys the solution to the development CMTOS.
2. FileNet Deployment Manager transfers the solution package from the development CMDOS to the production CMDOS.
3. Case Manager Administration Client deploys the solution to one or more CMTOS of the production domain.

The detailed procedures necessary to deploy solutions within domains and transfer them across domains are covered in detail in 11.3, “Deploying the solution to a new domain” on page 361.

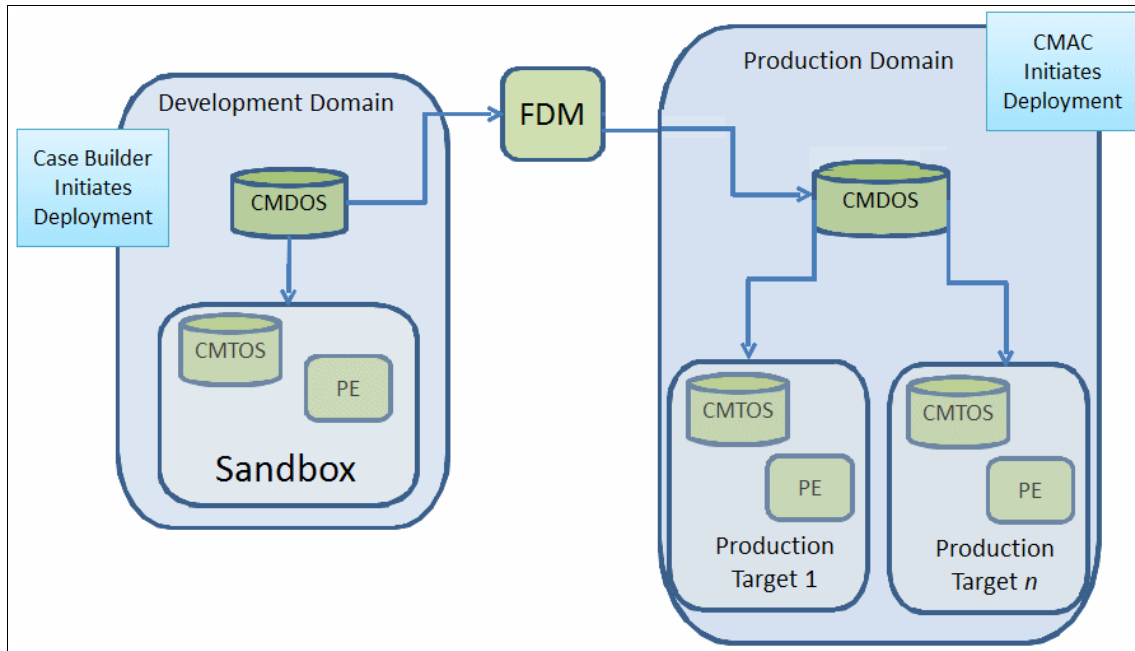


Figure 4-6 Case Manager development and production environments

The term “*target environment*” refers to an object store and associated PE isolated region. Each target environment can contain one or more solutions. Figure 4-6 shows one target environment on the development domain and multiple target environments on the production domain. If solution separation is desired in the production environment, individual solutions can be deployed into dedicated target environments. These target environments can reside in the same P8 domain or they can be contained in separate P8 domains. However, if a separate P8 domain is used, each must contain its own design object store and solution packages migrated to each using FDM.

4.6.1 Case Manager development environment

Case Manager development environments normally consist of single instances of each component. No hardware-based load balancing, server level clustering, or WebSphere ND clustering is required. For development environments, installing IBM HTTP Server (IHS) to front the Case Manager WAS profile is optional. Figure 4-7 on page 70 shows the Case Manager and P8 components making up the development environment.

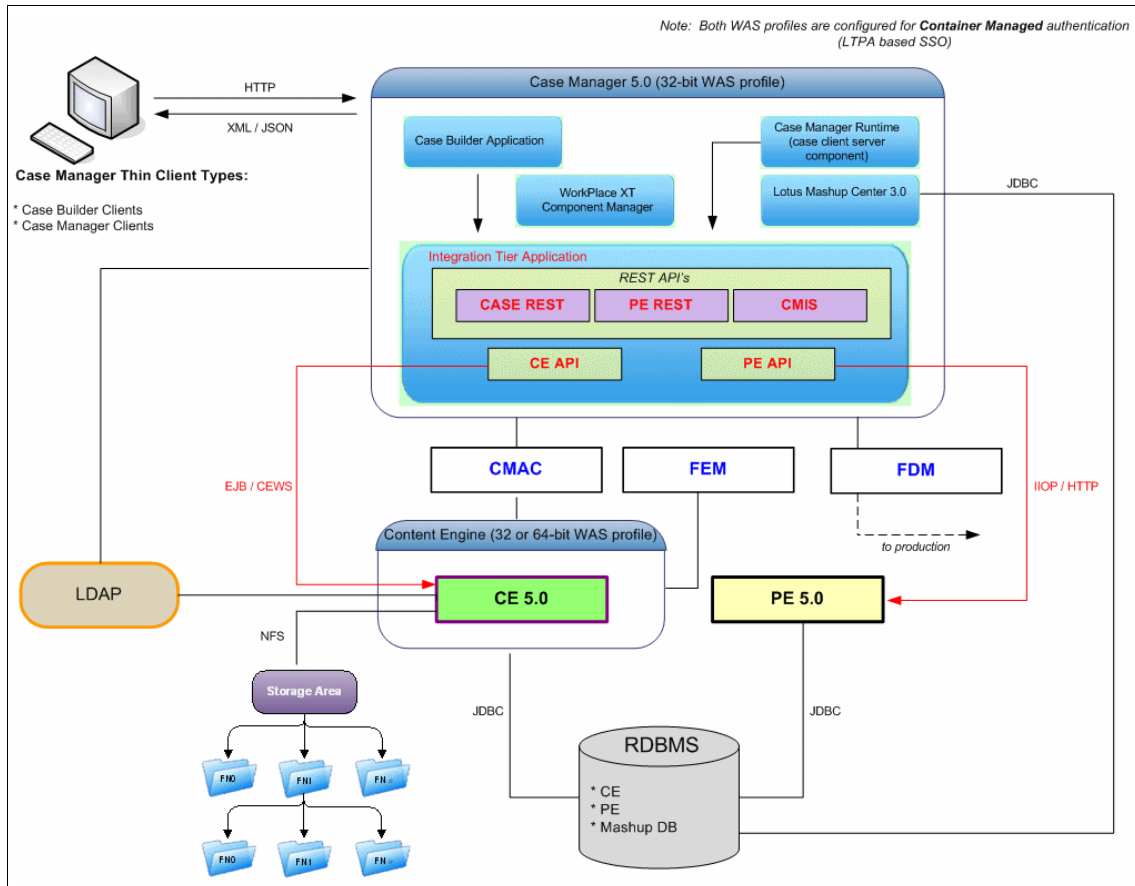


Figure 4-7 Logical view of a Case Manager development environment

This environment consists of the following:

- ▶ Case Manager 5.0 WAS profile (32 bit)
- ▶ Content Engine 5.0 WAS profile (32 or 64 bit)
- ▶ Process Engine 5.0
- ▶ Other administration and configuration applications:
 - Case Manager Administration Client (CMAC)
 - FileNet Enterprise Manager (FEM)
 - FileNet Deployment Manager (FDM)
- ▶ External infrastructure components:
 - RDBMS
 - Content storage subsystem

– LDAP

Note: The Case Manager applications must all reside in the same WAS profile. The Case Manager Administration Client (CMAC) does not run under WAS, but must reside on the same server as the Case Manager applications.

The Case Manager WAS profile and P8 components (CE/PE) can all be collocated and run by a single operating system or, alternately, separated and run on multiple machines. The machines can be physical servers or guest hosts running on supported virtualized platforms.

Because Case Manager solutions depend on a tight integration between the CE and PE, it is critical that fidelity between the CE and PE databases be maintained. To simplify database administrative tasks and support this fidelity, IBM Case Manager requires that the CE object store and associated PE tablespaces be created in the same database.

Note: A Case Manager Content Engine target object store can be associated with one, and only one, PE isolated region.

If multiple Case Manager solutions are deployed into the same target environment, they must all share the same Content Engine object store and Process Engine isolated region. If database isolation between solutions is required, multiple target environments must be implemented. These target object stores can exist in the same P8 domain or they can reside in separate P8 domains.

In Figure 4-7 on page 70, the WebSphere Deployment Manager is not shown. However, both profiles are contained in separate WAS “cells” and both are controlled by the same WAS Deployment Manager. Some customers elect to deploy the Content Engine into the same WAS profile used by the Case Manager applications. In this type of configuration, the Content Engine runs using the 32-bit JVM as well.

The Case Manager WAS profile illustrated in Figure 4-7 on page 70 contains the following applications:

- ▶ Case Manager Builder Application: Solution builder tool that is only deployed in the development environment.
- ▶ Case Manager run time (also known as the “Case Client”): Runtime environment used for launching, processing, and interacting with cases. This is deployed in both the development and production environments.
- ▶ IBM Lotus Mashup Center: Used to design user interface layouts and custom pages, and hosts the Case Client iWidgets.

4. Workplace XT and Component Manager: Used by Case Client for general ECM operations and eForms. A solution can be extended with additional functionality such as incorporating advanced searches using Workplace XT stored searches.
5. Integration Tier Application (also known as Case Manager API): Communication layer between components of the Case Manager applications. Also provides customers and partners with the ability to customize standard capabilities.

4.6.2 Case Manager production environment with high availability

The Case Manager production environment is where the Case Manager clients interact with the Case Manager Runtime environment. The example configuration described in this section describes the topology of a sample production Case Manager environment configured for high availability, focusing only on configurations that are specific to Case Manager. Detailed information about high availability solutions for the FileNet P8 platform can be found at:

<http://www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=filenet>

Case Manager production environments differ from development in the following ways:

- ▶ The Case Manager Builder application is not installed or used in a production environment. Solutions can only be created in development and the solution package must be moved from the development P8 Domain to the production P8 Domain using FileNet Deployment Manager (FDM).
- ▶ In a development environment, Case Manager Builder is used to deploy solutions. In a production environment, CMAc is used to deploy solutions.
- ▶ Solutions cannot be modified in the production environment. Changes to solutions can only be made in a development environment.
- ▶ Production Case Manager environments can contain DMZs, hardware load balancers, HTTP servers (IHS), and WAS ND clustering. Connection strings that map to multiple instances of the application are required for the following:
 - Content Engine EJB URL
 - IBM Case Manager API URLs
 - IBM Mashup Center URL

Note: See Chapter 6., “Set up overview and installation” on page 123 for examples on highly available connection strings for these components.

- ▶ Case Manager WAS clusters require a network share directory (NFS mount) that is accessible to all the nodes in the cluster. This share directory contains

files needed by Case Manager API for localization resources. These files are needed when the Case Manager deploy profile is created.

- Production Case Manager environments can take advantage of P8 distributed deployment and domain partitioning configuration options.
- The LDAP security configuration for production solutions are more restricted than the development environment. Production environments can use a different LDAP than development. The LDAP will be tied to the P8 domain hosting the Case Manager production domain.
- Production environments can contain a secure DMZ fronting Case Manager.
- A single P8 Domain is used for the Case Manager development and target environment. Production environments can consist of either single or multiple P8 domains, although each P8 domain requires its own design object store. Each production domain can have one or more target environments.

Figure 4-8 shows a production Case Manager environment with built-in redundancy for each component to provide higher availability.

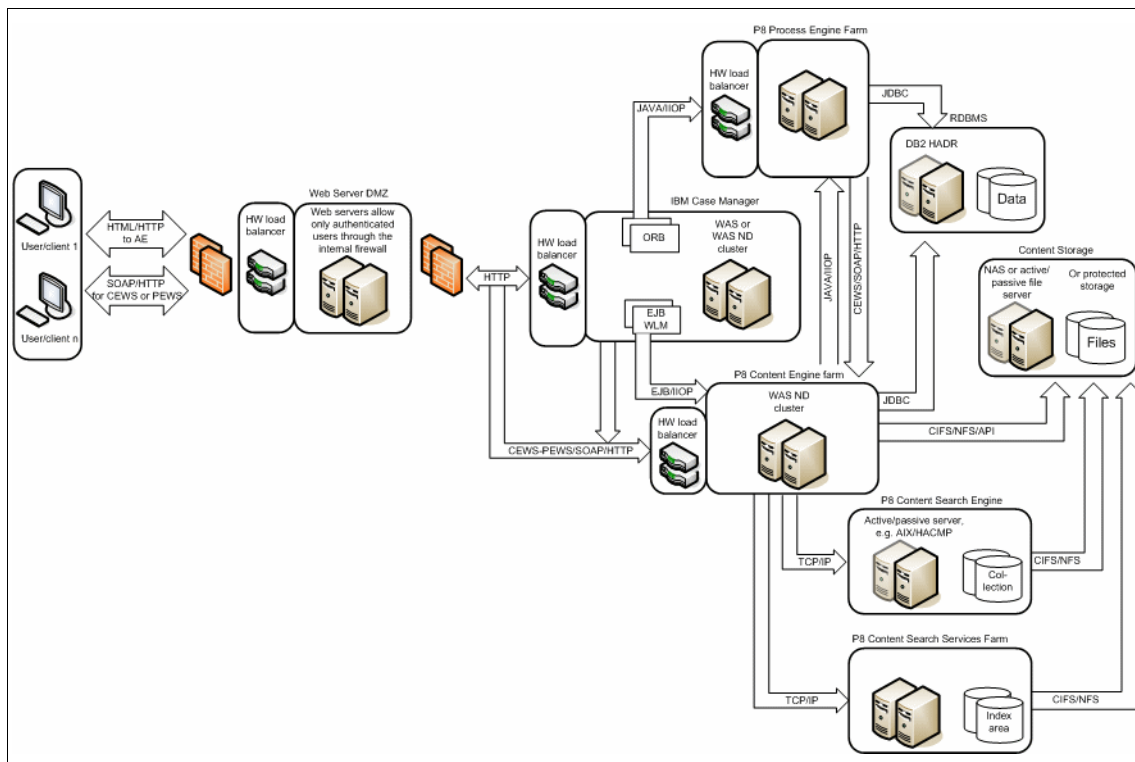


Figure 4-8 Overview of a highly available case manager environment

Case worker clients connect to the IBM Mashup Center URL to log in and interact with cases. In a highly available Case Manager WAS profile, there will be two more instances of Lotus Mashup center running. Load balancing and failover are achieved by fronting the Mashup center (the Mashup Hub) application instances with a hardware or software-based load-balancing solution. Typically this would be either IBM HTTP Server (IHS) or a hardware based device. Case Worker client connections require session persistence. This means that the load balancing mechanism must support session affinity or “sticky sessions”. This ensures that clients are always directed to the same mashup instance resource initially chosen to receive the traffic. Figure 4-9 shows a Mashup Center Virtual Name being mapped to two Mashup servers running in a WebSphere cluster. The Mashup Servers are shown running on two separate IBM LPARs. This configuration provides both load balancing and fault tolerance.

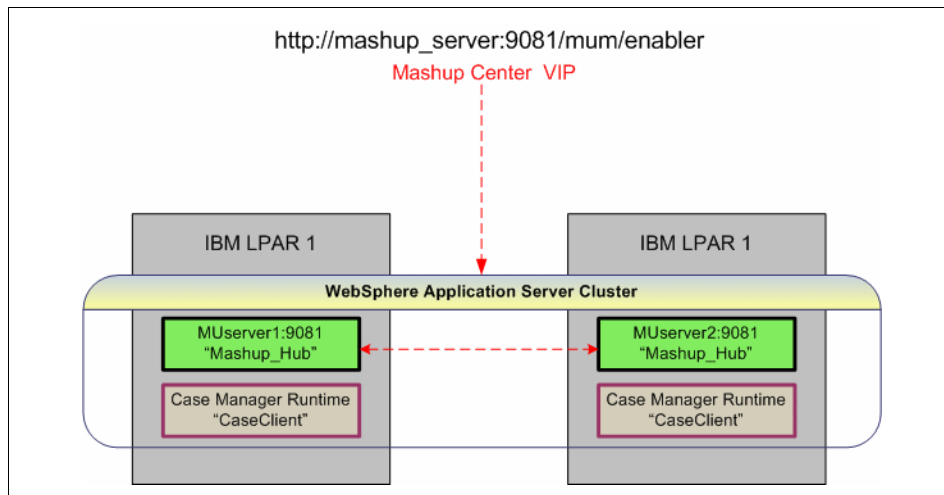


Figure 4-9 Mashup Servers configured for High Availability and fault tolerance

In a Case Manager environment, both the EJB and web services interface (WSI) are used to interact with the Content Engine. Additional information about highly available and scalability for the AE, CE, and PE can be found at the following URLs:

<http://www.redbooks.ibm.com/abstracts/sg247700.html?Open>
<http://www.ibm.com/support/docview.wss?uid=swg27010422>
<http://www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=filenet>

Because each target environment can have only one PE isolated region, the Process Engine farm in a Case Manager environment can only connect to a single isolated region in the database. If the production environment contains more than one target environment, additional PE farms are required.

Figure 4-10 shows two highly available Process Engine farms, each connecting to separate target environment isolated regions. In this example, each Process Engine isolated region is paired up with its associated Content Engine target object stored in the same database. The two pairs create two target environments. This configuration satisfies the Case Manager requirement that the CE and PE tablespaces for each target object store be collocated in the same database. Also, because both solutions are contained in the same P8 domain, there is only one design object store and one Lotus Mashup Center database.

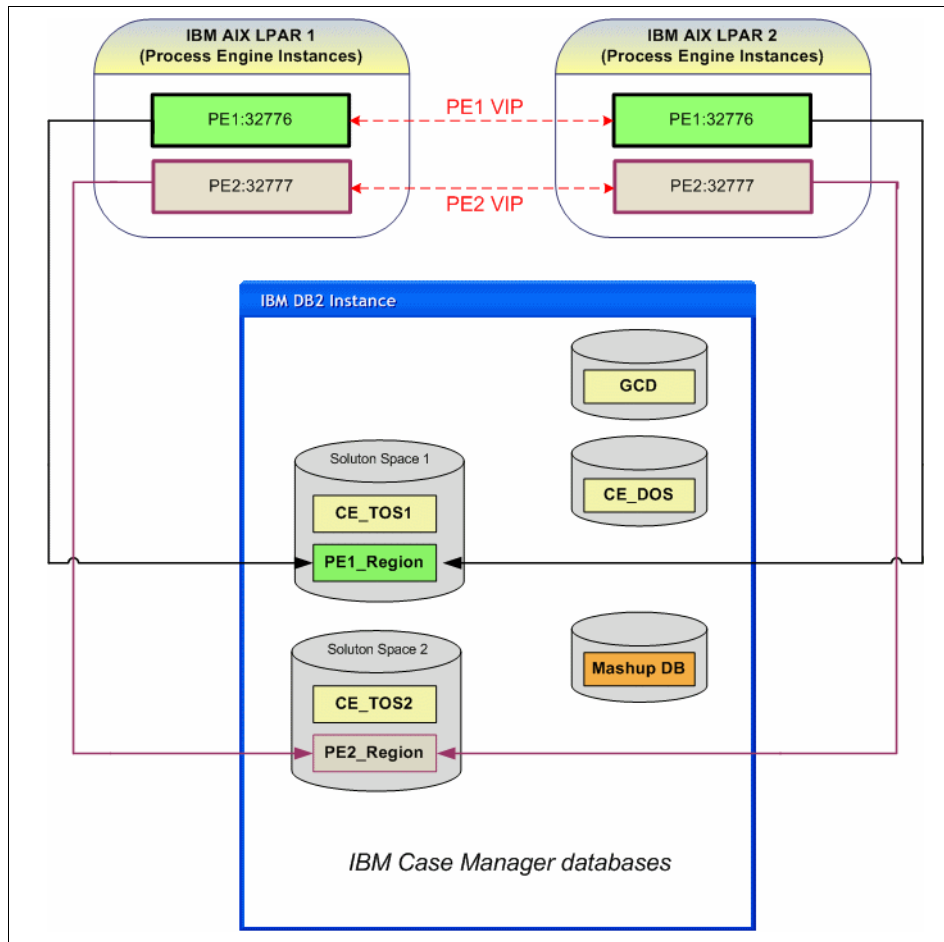


Figure 4-10 Example of PE farming and Case Manager target environment in a production P8 domain

In Figure 4-10, a virtual IP address (VIP) is used to address each PE farm.

4.6.3 Case Manager production environment with partitioning

Some Case Manager implementations can require that individual solutions be segregated within a single production P8 domain or be completely isolated into separate P8 domains. This section covers some sample configurations for Case Manager illustrating separation options for individual solutions.

When planning Case Manager solutions, take into account the following considerations:

- ▶ Estimated number of solutions and case workers.
- ▶ Anticipated number of concurrent solution designers.
- ▶ Do LOBs require dedicated environments, or can shared target environments be used?
- ▶ In terms of software maintenance, is it acceptable to have multiple environments that need patching and updating?
- ▶ In terms of operational considerations, is being able to stop, start, and backup Case Manager solutions independently a requirement?

The simplest configuration is to host all Case Manager solutions in a single target environment. In this type of configuration, all of the solutions are deployed to a single target object store and share a single Process Engine isolated region. Figure 4-11 shows a single P8 domain with three solutions being deployed from the CE_DOS design object store to the CE_TOS1 target object store. The Mashup database for the Lotus Mashup Center 3.0 application WAS ND cluster and Content Engine Global Configuration Database (GCD) are also shown in the figure.

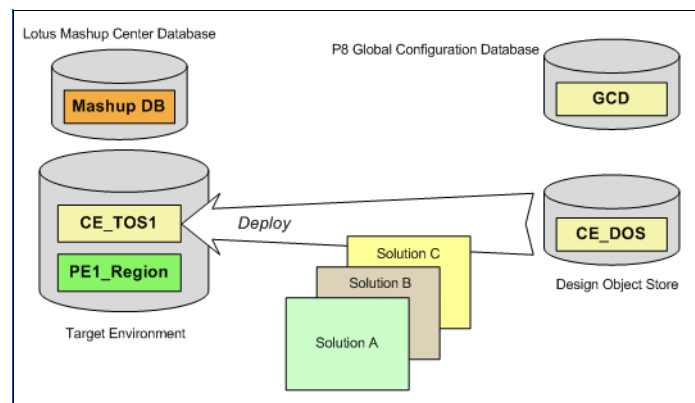


Figure 4-11 Case Manager Production environment with one target object store hosting three separate case manager solutions, all in a single P8 domain

Instead of having all the Case Manager solutions reside in a single shared target environment, each solution can be deployed into a separate target environment. In this configuration, each solution is provided with a dedicated Content Engine target object store and Process Engine isolated region. This provides data separation between the solutions, thus providing additional flexibility for database operations and maintenance. Figure 4-12 shows this type of configuration.

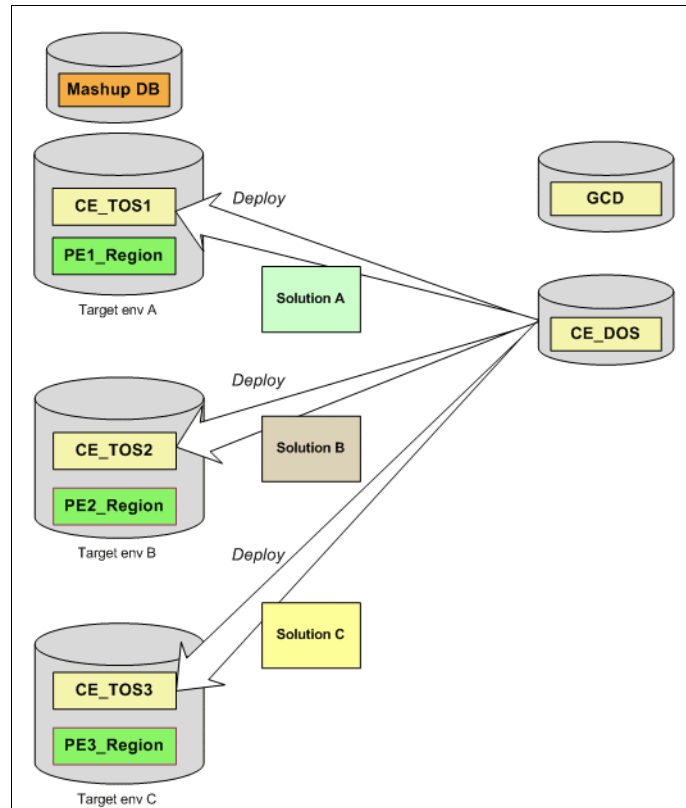


Figure 4-12 Case Manager production environment with three target object stores and one solution in each, all in a single P8 domain

If total solution separation is desired, each solution can be deployed into its own P8 domain. Figure 4-13 on page 78 illustrates this type of configuration, showing that the databases for all three domains being hosted by the same DB2 instance. It is also possible to host the databases for each domain in separate instances or database servers. This type of deployment provides the most flexibility for production environments.

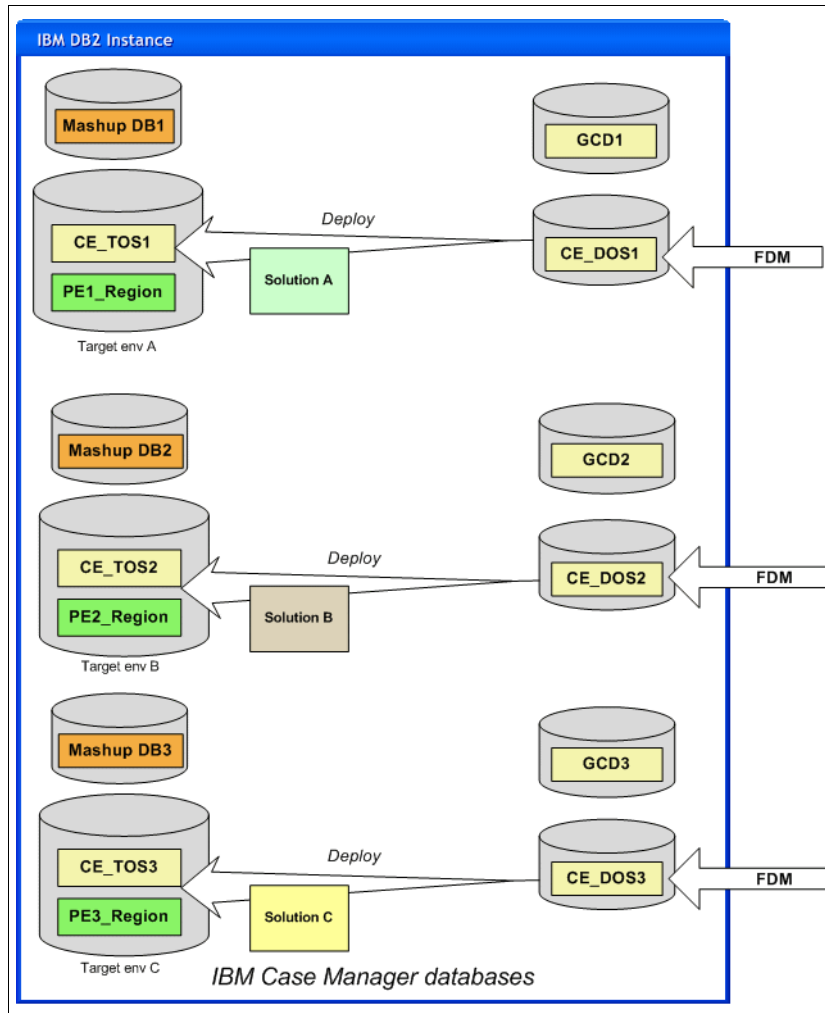



Figure 4-13 Case Manager production environment with dedicated P8 Domain for each solution



P8 Engine components support of IBM Case Manager

In this chapter, we cover the interior services interoperability within IBM Case Manager. This chapter covers the IBM Case Manager object model, describing the underlying components (P8 Process Engine and Content Engine) used by Case Manager and how the engines interact with one another. The chapter also covers the task-to-workflow relationship and the integration with WebSphere Process Server (WPS).

This chapter contains the following topics:

- ▶ IBM Case Manager case object model
- ▶ P8 Engine usage by IBM Case Manager
- ▶ WebSphere Process Server integration

5.1 IBM Case Manager case object model

In this section, we describe the IBM Case Manager case object model and implementation. We include the overall IBM Case Manager solution and related artifacts required as part of the solution. A better understanding of the case object model will help you develop case solutions with IBM Case Manager.

Figure 5-1 shows the IBM Case Manager object model.

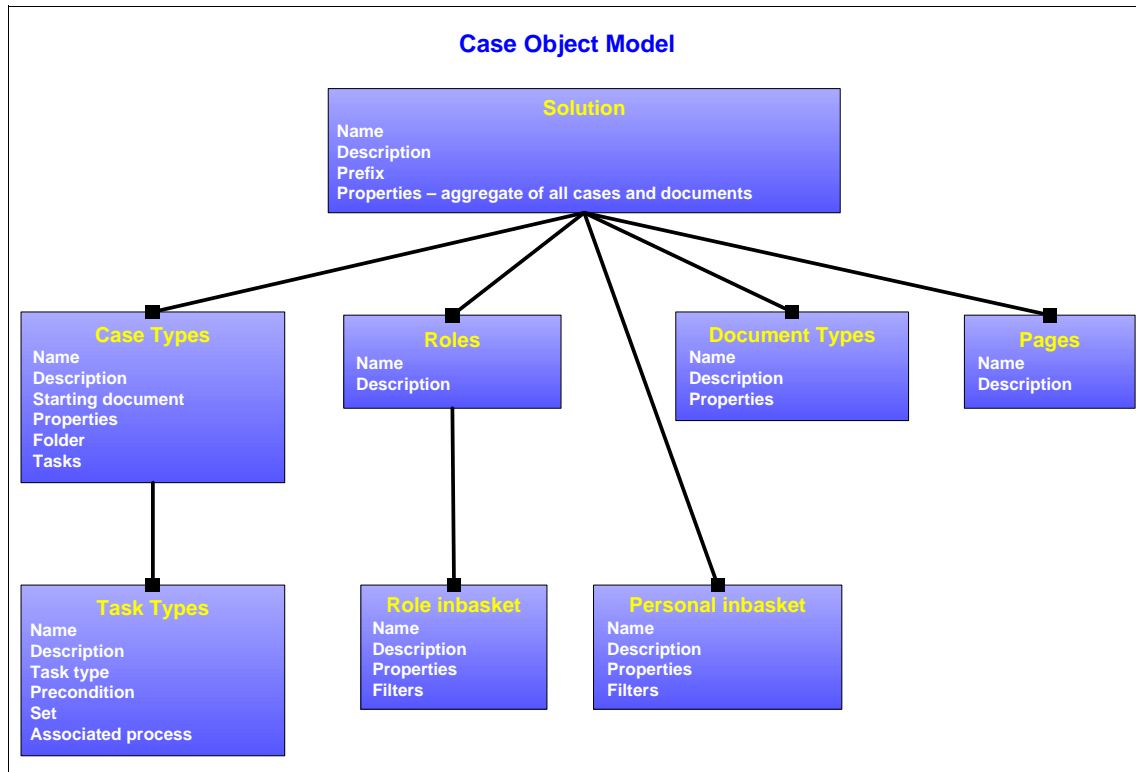


Figure 5-1 Case Manager object model

5.1.1 Solution

A *solution* consists of a user interface together with document types, property types, case types, and tasks. Each Case Manager solution has a solution prefix to provide identification in a Content Engine object store and Process Engine isolated region.

IBM Case Manager Client represents a solution as a *solution space* in which users log in to manage and process their cases. Solution spaces contain the pages for case and step data. IBM Case Manager Client uses the *case pages* to present the case information to the users such as the case properties, case history, and so forth. IBM Case Manager Client displays the process data using the *step pages*. The solution space name is the solution name.

You can implement a solution in a PE isolated region and CE object store. In an IBM Case Manager environment, there is a one-to-one relationship between a PE isolated region and a CE object store.

PE represents a solution as an *application space* in a PE isolated region. An application space contains the roles and their inbaskets. In addition, there is a roster defined in a PE isolated region for each solution. The application space name is the solution name. The roster name is a normalized version of the solution name to conform with the naming convention for a roster in PE.

CE represents a solution as a folder of type “Deployed Solution” (CmAcmDeployedSolution) in a CE target object store. The deployed solution folder contains definitions for case types and their instances. The name of the deployed solution folder is the solution name.

Table 5-1 lists some of the relevant properties of the CmAcmDeployedSolution class.

Table 5-1 CmAcmDeployedSolution class properties

Property Name	Type	Description
Folder Name	String(255)	Name of the solution
Deployment State	Integer Choice List	State of deployment: Initiated, Validated, Failed
Configuration	Long String	Solution configuration data: test solution URL, version series ID for solution artifacts, PE connection point
Mashups server URI	String(255)	URI of Mashups server

Solution package

A *solution package* is a set of XML files and folders that are the artifacts of a solution. The package contains the following:

- ▶ Solution Definition File (SDF)
The SDF contains definitions of property types, document types, case types, and task types used in the solution.
- ▶ PE Configuration File
The PE Configuration File defines the Process Engine configuration for a solution. The file contains definitions for the application space, roster, event logs, queues, in-baskets, roles, and step processors.
- ▶ Workflow Definitions (XPDL)
The XML Process Definition Language (XPDL) is a collection of workflows associated with each case type. Each workflow in the XPDL corresponds to a task in a case type. Case Manager Builder creates a separate XPDL file for each case type.
- ▶ Pages folder
A Pages folder is created under the solution folder in the design object store when a solution is deployed. This pages folder contains pages and spaces objects. Pages are references to page IDs in Lotus Mashups. In Lotus Mashups, the pages are the window layouts for displaying case and task data. Spaces are the containers for pages.

5.1.2 Case types

A *case type* is a definition of a case. A case type has the following items:

- ▶ A collection of properties which become case folder properties.
- ▶ A collection of property views specifying which properties IBM Case Manager Client displays in the case widget data.
- ▶ A folder structure for storing documents.
- ▶ A collection of tasks to specify business processes and process data.
- ▶ A page layout specifying which case page IBM Case Manager Client widgets use to create cases at run time.
- ▶ A starting document type. In an IBM Case Manager environment, the users creates a case instance from the IBM Case Manager Client user interface (UI) or by checking in a document of the document type specified as a starting document type for a case type.

CE implements the case type as a subclass of the Case Folder class (CmAcмCaseFolder). The Case Folder class is a subclass of the Base Case class (CmAcмBaseCase).

Table 5-2 lists the relevant properties of the CmAcмCaseFolder class used in IBM Case Manager.

Table 5-2 CmAcмCaseFolder class properties

Property Name	Type	Description and Notes
Folder Name	String(255)	The name of a case. This is an inherited property from CmAcмCaseBase.
Case Identifier	Object	A specially formatted identifier for Case Folder instances, consists of Case Folder subclass symbolic class name, “_” and then a 12 digit sequence number with leading zeros
Case State	Integer Choice List	Possible values: New, Initializing, Working, Complete, and Failed. For a state transition diagram, see Figure 5-2 on page 85.
Initiating Document	Object	An object value property which, if not null, references a Document object instance that triggered the creation of a case.
Parent solution	Object	An object value property that references the Deployed Solution Folder instance associated with this case folder class.
<properties>	<property type>	The Business Analysts can overwrite the default value of the properties. The case workers update the values for these properties while processing the case.

PE associates a case type with an event log and a workflow collection (an XPDL file). Each workflow in an XPDL file uses the same event log defined for a case type.

The event log name is *<solution prefix>_<normalized case type name>* to satisfy the PE naming convention for event logs. The *solution prefix* provides identification for a solution in a PE isolated region because multiple solutions can have the same case type name.

Case type properties become PE data fields for the workflows in the workflow collections associated with a case. For more details on PE and CE interaction for a case regarding case properties, see 5.3, “P8 Engine usage by IBM Case Manager” on page 114.

Cases

A *case* is an instance of a case type. You refer to it as a case or a case instance. Users can create cases by performing one of the following:

- ▶ Creating a case folder of subclass *CmAcmDeployedCaseType*. IBM Case Manager Client uses this method to create a case when users execute the add case operation. See “Create solution root folder” on page 109 for information related to *CmAcmDeployedCaseType* and a solution root folder.
- ▶ Creating a document of the initiating document type for a case if the case type has an initiating document property defined.

In an IBM Case Manager environment, case workers can update the case properties in one of the several ways:

- ▶ Update the case properties from IBM Case Manager Client.
- ▶ Update the case properties from the data associated with a task for a case. The task data can be from a PE workflow process or an external process such as WPS.
- ▶ Update the case properties using custom applications.

Case state

At any given moment, a case has one of the following states, which the CE event handler manages:

- ▶ **New:** A case is set to this state when CE creates it.
- ▶ **Initializing:** A case is set to this state while CE sets the case properties.
- ▶ **Working:** A case is set to this state when there are uncompleted tasks.
- ▶ **Complete:** A case is set to this state when all its required tasks are completed.

- **Failed:** This state is not currently used by the default IBM Case Manager. However, users can use this state in their custom applications to indicate a case that is in an exception or abnormal state.

Figure 5-2 shows the state diagram for a case.

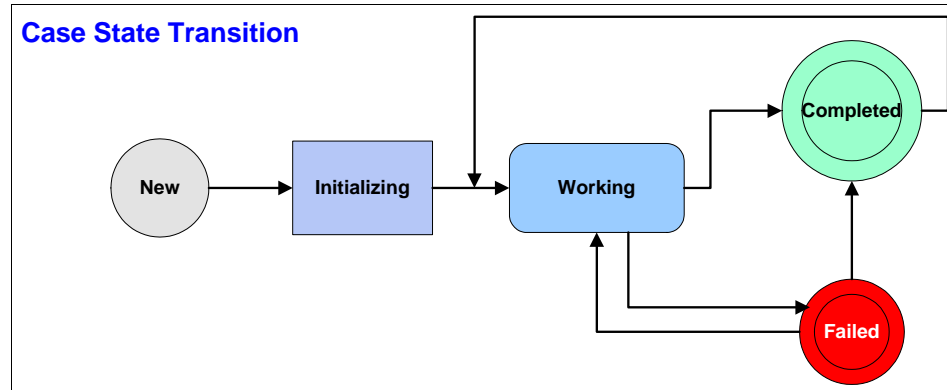


Figure 5-2 Case State Transition

CE Case Folder Update event handler enforces case state transition rules as follows:

- The user cannot reset the state to NEW.
- The user cannot reset the state to INITIALIZING.
- If a case is in the WORKING state, the case state can be set to either COMPLETED or FAILED.
- If a case is in the COMPLETED state, the case state can be set to WORKING.
- If a case is in the FAILED state, the case state can be set to WORKING or COMPLETE.

The CE event handler moves a case to the COMPLETED state if all tasks are completed or disabled. The CE event handler ignores updates related to case initialization during the case creation event. It also ignores updates related to case state moving to WORKING during the case creation event.

5.1.3 Roles

Business analysts define roles at the solution level using IBM Case Manager Builder. All cases in a solution share all the *roles*. Each role has at least one in-basket associated with it. A role determines the work items available for a case

worker to process. It also determines the spaces and pages to which a case worker has access.

During the solution design process, business analysts associate roles with the swimlanes for the process flow of a task. At run time, case administrators assign the users to the roles. When the case workers log in, IBM Case Manager Client presents to the case workers a list of the available work items based on the roles the case workers participate in based on their log in and what role they select as their current view in the Case Manager Client.

When defining a case type, business analysts can select the case page layouts for the roles which the case workers use to process case data.

For each role and associated in-basket defined in a solution by the business analysts, IBM Case Manager Builder defines a PE role, associated in-basket, and a work queue in the PE configuration file of that solution. The properties specified for a role become the exposed data fields for a PE work queue. Table 5-3 specifies the mapping between roles in a solution and PE configuration elements.

Table 5-3 Roles to PE element mapping

Roles in Solution	PE Roles	PE Queues
Role Name Example: Customer Service Representatives	same as Role Name	<solution prefix>_<normalized role name> Example: CC_CustomerServiceRep resentatives

The normalized role name is the role name using only characters that are valid for a queue name in PE.

5.1.4 Document types

A *document type* is the definition of a document class in CE. A document type allow users to classify the document as belonging to a case. A document type can have properties. When business analysts define properties for a document type, the business analyst can overwrite the default values for those properties. A document type can trigger a case or task creation.

When designing the case types, business analysts can assign a document type to be the “initiating document type” (also called “starting document type”) for a case type. When users create a document of the same type as the initiating document type for a case type, IBM Case Manager creates a case instance of

that case type. A document type can be the “initiating document type” for one or more case types.

When designing task types, business analysts can specify a document type as a “filing precondition” for a task creation. This precondition dictates when IBM Case Manager creates a task for a case instance. If a user files a document in a case instance folder, IBM Case Manager creates a task for the case instance if the task has the filing precondition and the document class is the same as the document type specified for the precondition.

The display name for a document type is the document type name. The symbolic name for a document type has the format of <solution prefix>_<normalized document type name>. Figure 5-3 on page 88 shows the document class with its symbolic name and properties.

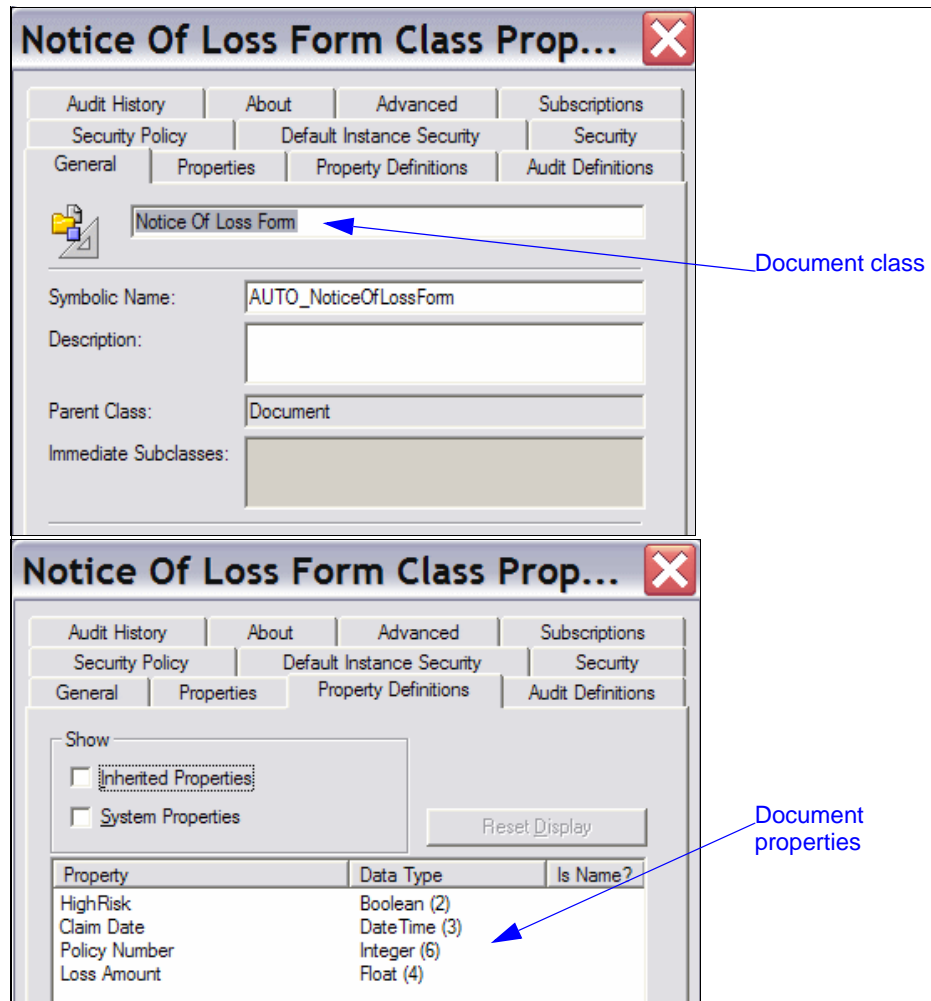


Figure 5-3 Document class example

5.1.5 Pages

Pages are the user interface IBM Case Manager Client presents to case workers to manage and process cases. In Lotus Mashups, a page consists of a layout, widget configurations, and the flow of the events between widgets.

Each solution has a set of default pages. This section describes the function of each default page and the widgets it contains.

Work Page

The Work Page is a default page belonging to a solution space. The Work Page contains in-basket widgets displaying the work items in a role's in-basket and a personal in-basket. By default, the Work Page contains the Add Cases and Manage Roles widgets. The Add Cases widget allows case workers to create new cases. The Manage Roles widget lets the case administrators assign role membership.

For details on in-baskets, see 5.1.7, “Roles and personal in-basket” on page 102.

Figure 5-4 shows the layout of the Work Page.

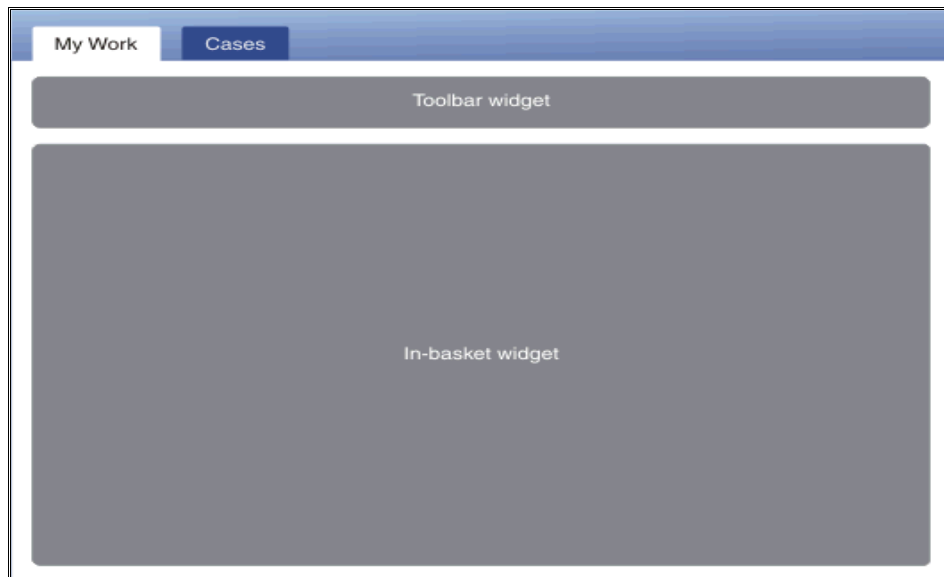


Figure 5-4 The Work Page layout

Cases Page

The Cases Page is another default page for a solution space. The Cases Page provides case search capability. The page also displays search results in a Case List widget.

Figure 5-5 on page 90 shows the page layout of the Cases Page.

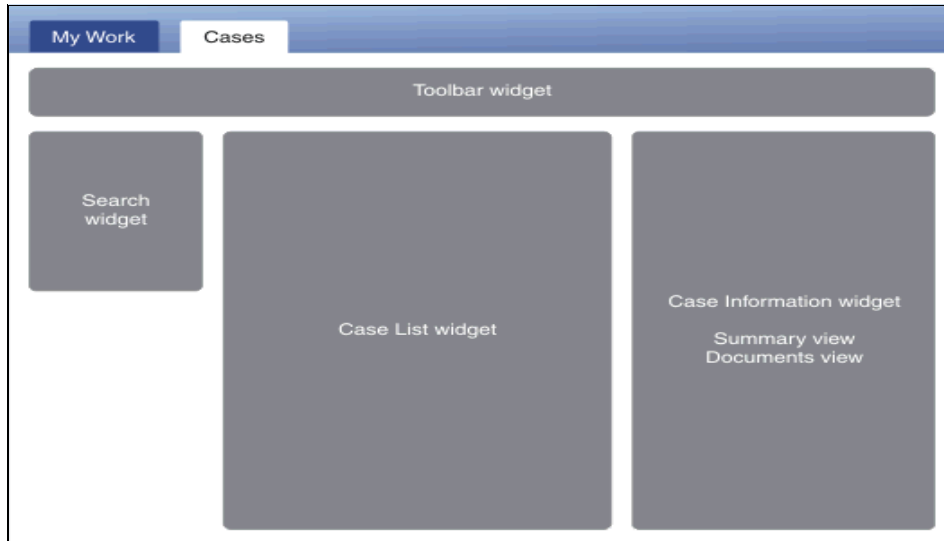


Figure 5-5 The Cases Page layout

Add Task page

Add Task page is a default step page. IBM Case Manager Client displays this page when a case worker adds a user-creatable task for a case. A user-creatable task is also known as an ad-hoc task or a discretionary task. Add Task belongs to the Step Pages space.

Figure 5-6 on page 91 shows the layout of the Add Task page. For detailed information about widgets, see “Case Manager widgets” on page 94.

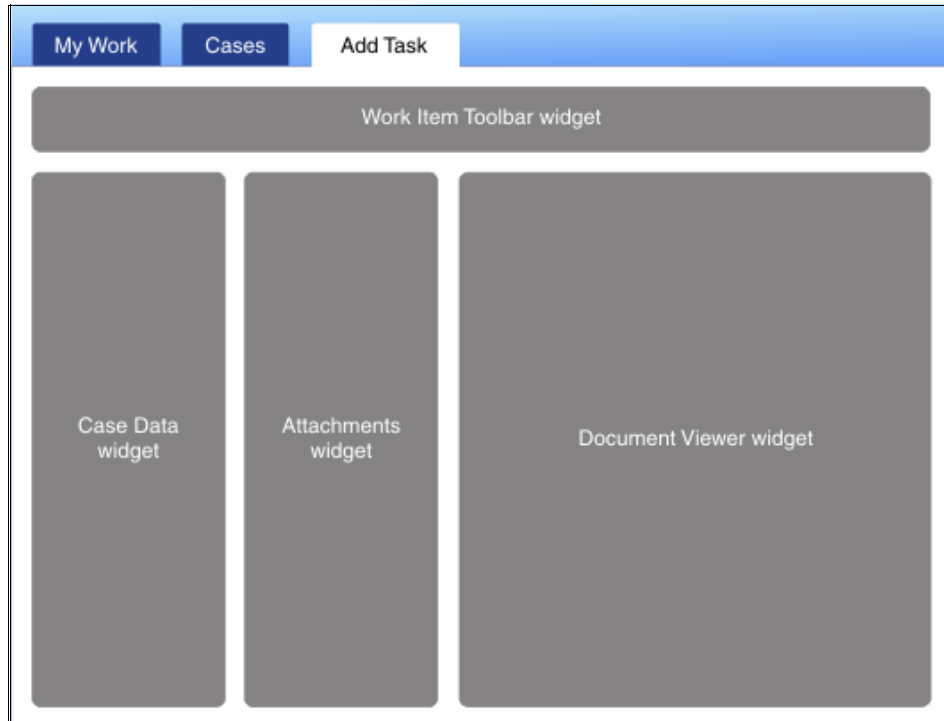


Figure 5-6 The Add Task page layout

Work Details page

Work Details page is a default step page. IBM Case Manager Client displays this page when a case worker opens a work items from an in-basket. The Work Details page belongs to the Step Page space.

Figure 5-7 on page 92 displays the layout of the Work Details page. For detailed information about widgets, see “Case Manager widgets” on page 94.

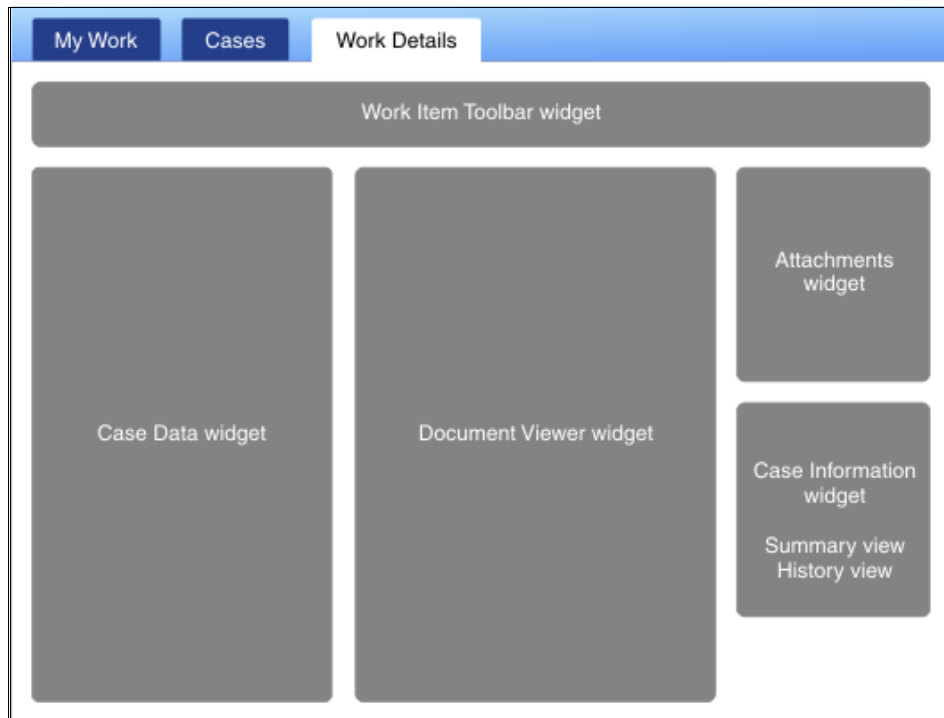


Figure 5-7 The Work Details page layout

Add Case page

The Add Case page is a default case page for creating a case instance. The Add Case Page belongs to the Case Pages space.

Figure 5-8 on page 93 shows the default layout of the Add Case page. For detailed information about widgets, see “Case Manager widgets” on page 94.

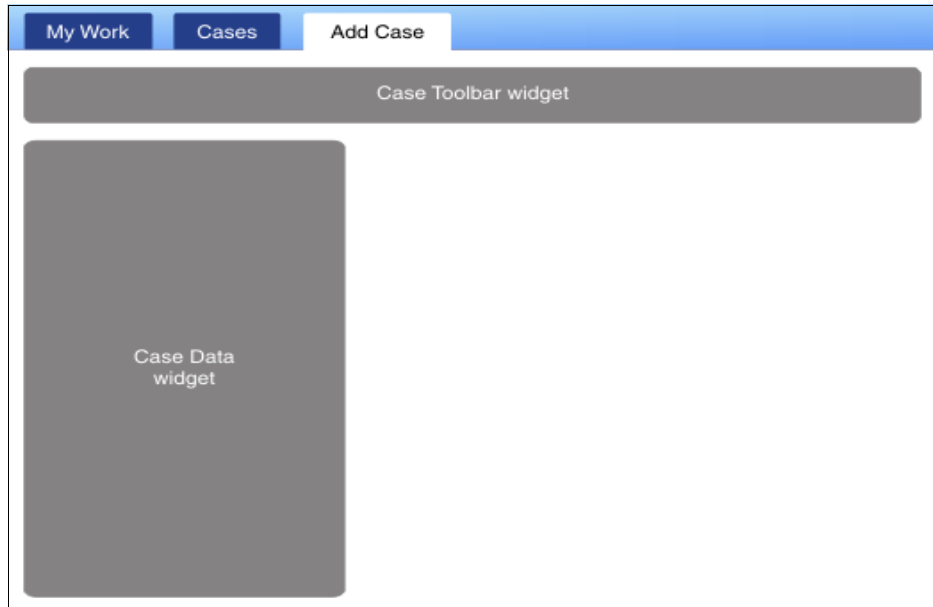


Figure 5-8 The Add Case page layout

Case Details page

The Case Details page is a default case page for displaying case data. This page contains widgets for various case views such as the case data view, the case history view, and the case task view. Case Details belongs to the Case Pages space.

Figure 5-9 on page 94 shows the layout of the Case Details page. For detailed information about widgets, see “Case Manager widgets” on page 94.

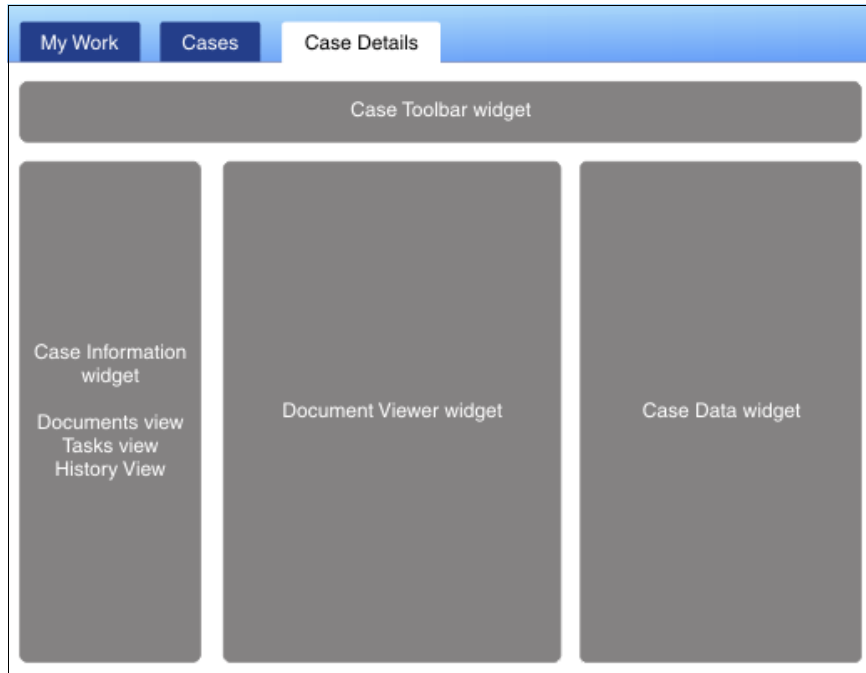


Figure 5-9 The Case Details page layout

Case Manager widgets

A page contains a set of widgets. The following is a list of the standard widgets IBM Case Manager provides:

- In-baskets widget

The In-baskets widget displays two works list: one for an in-basket associated with the current role and another for the personal in-basket. The in-basket for a role is a view of a PE public queue. The personal in-basket is a view of a PE Inbox queue.

- Work Item Toolbar widget

The Work Item Toolbar widget contains various buttons for case workers to process the work item data. The common buttons in this widget are **Complete**, **Save**, and **Add Comment**.

The Work Item toolbar can also contain the buttons for a response if a case worker needs to select a response before dispatching a work item.

This widget communicates with PE through the IBM Case Manager API to perform step operations such as completing a step, saving step data, and dispatching a step with a response.

► Case Data widget

In a Step page, a Case Data widget allows case workers to update the data values for a work item of a step. When a case worker completes a step, the Case Data widget issues a request to the PE to update the work item with the new values and update the case properties.

In a Case page, a Case Data widget displays the case data in the order specified in the case data view of the case. This widget allows case workers to enter the values for the case properties to create a new case or update a current case instance using the IBM Case Manager API.

► Case Information widget

The Case Information widget has four panes: Summary, Documents, Tasks, and History. The case administrator can hide or show the panes and configure the display of the panes using widget settings.

The Summary panel displays the case data in the order specified by the business analysts in IBM Case Manager Case Builder for the case summary view. This panel provides an overview of the important information of a case.

The Documents pane handles document operations including adding, viewing, checkin, and checkout. This panel is typically wired to the Document Viewer widget.

The Tasks pane displays the tasks and their states for a case. From the Tasks pane, case workers can start or disable a manual task.

The History pane displays list of recorded events for the cases, documents, tasks, and comments. The user can extend this pane to contain additional event types. This pane also has Lotus Sametime chat awareness, which allows users to see the chat status of other users.

► Document Viewer widget

The Document Viewer widget displays the documents using the viewer technology available with P8.

► Attachment widget

The Attachment widget displays the documents attached to a task. The Attachment widget supports other operations for content authoring such as adding and viewing.

► Search widget

The Search widget provides simple and advanced search capabilities to search for cases. The Search widget passes the search request to the Case List widget for execution and displaying of the search results.

- ▶ Case List widget

The Case List widget executes the search query received from the Search widget. The Case List widget displays the search result in summary or detail view. For the detail view, the Case List widget shows all case properties and their values for a case in the order specified by the business analysts for the case detail view defined for the case type.

- ▶ Case Toolbar widget

The Case Toolbar widget has two main operations: add comment and add task.

The **Comments** button allows case workers to add comments to a case. The IBM Case Manager API adds the comments to a case as annotation objects of type Case Comment (CmAcmeCaseComment).

The **Add Task** button lets case workers add a user-creatable task (also known as ad hoc or discretionary task). The IBM Case Manager API creates a task and launches the associated workflow.

- ▶ Case Data eForm widget

The Case eForm is a replacement for the standard Case Data widget. A business analyst can assign a custom page that contains a Case Data eForm widget to a step. When a case worker opens a step, IBM Client Manager presents the case workers the Work Data eForm page that includes the Case Data eForm widget. The case worker can edit the data values on the form and optionally save the form as a document for a case.

- ▶ Command widget

The Command widget is a hidden widget that controls the communication between widgets on a page. Utilizing IBM Case Manager API, the Command widget provides the following capability:

- Handle page navigation events for displaying a case data and work item details.
- Handle data loading and saving for a case data and work items.

5.1.6 Task types

A *Task type* is a definition of a Task class. IBM Case Manager contains two Task types derived from the CE base class Task (CmTask). They are as follows:

- ▶ Case Task (CmAcmeCaseTask): Defines tasks that do not have a filing document precondition.
- ▶ Task With Initiating Document (CmAcmeCaseTaskWithInitiatingDocument): Defines tasks that have a filing document precondition. This class derives from Case Task.

Table 5-4 shows the property definition for Case Task.

Table 5-4 Case Task property definition

Property Name	Types	Description
Task Name	String	Name of a task
Disabled State	Integer with choice list	An integer choice list that defines the possible disabled state of a task object. Possible values are: ENABLED, DISABLED_BY_USER, DISABLED_BY_EXCLUSIVE, DISABLED_ABORTED
Required State	Integer with choice list	An integer choice list that defines the possible required state for a task object. Possible values are: OPTIONAL, REQUIRED_BY_USER, REQUIRED_BY_INCLUSIVE
Launch Mode	Integer with choice list	An integer choice list that defines the launch mode for a task. Possible values are: SYSTEM_MANUAL, SYSTEM_AUTOMATIC, USER_AUTOMATIC, SYSTEM_MANUAL_REPEATABLE, SYSTEM_AUTOMATIC_REPEATABLE
Launch Group	Integer	Id for the group of tasks. Tasks in the same group share the same integer value.
Group Mode	Integer with choice list	An integer choice list that specifies the group mode for a task. Possible values are: NOT_GROUPED, EXCLUSIVE, INCLUSIVE

Task With Initiating Document has all the properties inherited from the Case Task class as shown in Table 5-4. In addition, Task With Initiating Document class has an additional property called Initiating Document of type Object.

Case Task class properties

The following description provide more information about the Case Task class (CmAcnCaseTask) properties:

► Task Name

If a task is a user-creatable task, case workers specify the task name when they create the task. Otherwise, the task has the name of the Task class.

► Disabled State

The value of this property indicates whether a task is disabled. If it is disabled, the value also indicates how it was disabled. The property is a choice list with the following values:

- **ENABLED**: The task is currently not disabled.
- **DISABLED_BY_USER**: A task has been disabled by a case worker.
- **DISABLED_BY_EXCLUSIVE**: A task is disabled because it belongs to an exclusive group and one of the tasks in the group has been promoted to the **WORKING** state.
- **DISABLED_ABORTED**: A task is disabled because its associated workflow has been aborted.

► Required State

The value of this property indicates whether the task completion is required to complete a case. A case is completed only when all the required tasks are completed. This property is a choice list with the following values:

- **OPTIONAL**: The task is not required for a case. This is the default value.
- **REQUIRED_BY_USER**: This value indicates a business analyst has marked the task as required when defining a case type for a solution.
- **REQUIRED_BY_INCLUSIVE**: This value indicates the task belongs to an inclusive group and one of the members of the group has been promoted to the **WORKING** state.

► Launch Mode

The value of this property specifies the state of a task when IBM Case Manager creates the task and whether the task is repeatable. The property is a choice list with the following values:

- **SYSTEM_MANUAL**: This value indicates a business analyst has marked the task as a manual task when defining a case type for a solution. When IBM Case Manager creates a task using the CE event handler, IBM Case Manager promotes the task from **WAITING** to **READY** if the task has no pre-condition that would prevent it from being promoted. The task remains in the **READY** state until a case worker starts the task, which then promotes it to the **WORKING** state. For more information about task states, see “Task states” on page 100.
- **SYSTEM_AUTOMATIC**: This value specifies a business analyst has marked the task as an auto-launch task. When IBM Case Manager creates a task using CE event handler, IBM Case manager promotes the task from **WAITING** to **WORKING** and launches its associated workflow if the task has no pre-condition that would prevent it from being promoted. For more information about task states, see “Task states” on page 100.

- **USER_AUTOMATIC:** The property has this value when a business analyst has marked the task as a user-creatable task. IBM Case Manager only creates a task per a case worker's request. After it is created, IBM Case Manager promotes a task from WAITING to WORKING state and launches its associated workflow. For more information about task states, see "Task states" on page 100.
- **SYSTEM_MANUAL_REPEATABLE:** This value specifies the task is manual and repeatable. This value has the same attribute as SYSTEM_MANUAL.
- **SYSTEM_AUTOMATIC_REPEATABLE:** This value specifies that the task is auto-launch and repeatable. This value has the same attribute as SYSTEM_AUTOMATIC.

Note: For a repeatable task, multiple instances of the task can be created for a given case. For a non-repeatable task, only one instance of the task can be created for a given case.

► Group Mode

This property specifies whether a task is stand-alone, inclusive, or exclusive. This property is a choice list property with the following values:

- **NOT_GROUPED:** The task does not belong to any group. This value is the default value.
- **EXCLUSIVE:** The task belongs to an exclusive group. When IBM Case Manager promotes a member of an exclusive group from the READY state to the WORKING state, the rest of the group is set to the DISABLED state.
- **INCLUSIVE:** The task belongs to an inclusive group. When IBM Case Manager promotes a member of an inclusive group from the READY state to the WORKING state, the rest of the group is promoted to the WORKING state as well.

Note: A repeatable task cannot belong to a group. A non-repeatable task can belong to no more than one group.

Workflow association

Task types are associated with workflow definitions. There are two possible implementations for a workflow definition:

► From Case Builder

Business analysts can create workflow definitions using the Step Editor from Case Builder and can use Process Designer to further enhance workflow definitions with advanced features not available in the Step Editor.

- From WebSphere Process Server

Using WebSphere Integration Developer (WID), business analysts can create workflow definitions containing instructions on invoking the business processes in WPS.

In order to launch a workflow for a task, IBM Case Manager wires a task type to a workflow subscription with an event of type `CmAcnTaskWorkflowLaunchEventAction`. IBM Case Manager launches the workflow associated with a task when a `CmAcnTaskWorkflowLaunchEventAction` is triggered.

Tasks

Tasks are the instances of Task types. When creating a case, IBM Case Manager creates the tasks and sets their states depending on the launch mode and the group mode properties of the task. When created, the tasks have the `WAITING` state as the initial state except for user-creatable tasks, which after being created are always set to the `WORKING` state.

IBM Case Manager promotes non-user-creatable tasks to either `WORKING`, for auto launch tasks, or `READY`, for manual launch tasks, when the precondition for a task is satisfied. There are three possible precondition types as follows:

- Filing precondition

In order to create a task, case workers must file into a case instance a document of a document class specified in the Filing precondition for the task. IBM Case Manager sets the state for a task based on its launch mode. See “Task states” on page 100 for Task state information.

- Property precondition

When an expression containing case properties satisfies the condition specified in the Property precondition, IBM Case Manager sets the state for a task based on its launch mode. See “Task states” on page 100 for Task state information.

- No precondition

IBM Case Manager promotes the state of a task to `WORKING` right after creation. See “Task states” on page 100 for Task state information.

Task states

If a task state is in the `WORKING` state, IBM Case Manager launches a workflow associated with the task. Figure 5-10 on page 101 shows the state diagram for a task.

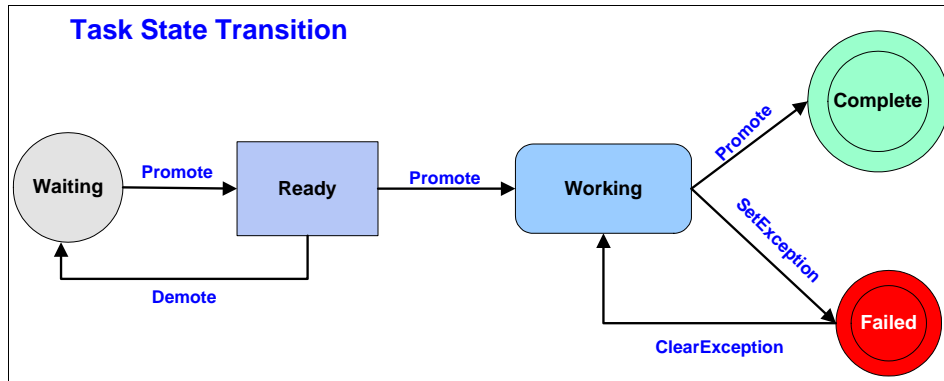


Figure 5-10 Task state transition

A task can be in one of the following states:

► **Waiting**

A task is in this state when IBM Case Manager first creates it. A task can enter this state when it is disabled (Demoted) from the Ready state.

► **Ready**

A task is in this state when the precondition for the task is met and the task has the manual launch mode.

► **Working**

IBM Case Manager launches a workflow associated with a task when it is in this state. A task can enter this state when one of the following occurs:

- A case worker creates a user-creatable task.
- A case worker starts a manual task currently in the Ready state.
- The exception for the task in the Failed state is rectified and the “Disabled State” property for the task is not set to DISABLED_ABORTED.

Case workers cannot disable a task in this state.

► **Complete**

The task is completed. A workflow associated with the task is completed. Case workers cannot disable a task in this state.

► **Failed**

The task is in this state when its associated workflow is in the Failed state or the Malfunction state. If the failure condition is rectified, the state of the task can be set back to WORKING.

A task can also be in this state if all the work items for a workflow associated with it are deleted abnormally. In this case, the state of the task cannot be set back to WORKING.

Case workers cannot disable a task in this state.

5.1.7 Roles and personal in-basket

The *roles in-basket* is a bucket containing the work items that are assigned to a group of case workers who share the same role. IBM Case Manager implements a role in-basket as a PE public queue in-basket.

The *personal in-basket* displays the work items assigned to a particular case worker. IBM Case Manager implements personal in-basket as a PE Inbox in-basket. In IBM Case Manager, personal in-basket contains a default workflow data field “SolutionIdentifier” to filter work items in personal in-basket based on a solution name.

5.2 Case object model implementation

In 5.1, “IBM Case Manager case object model” on page 80, we discussed various objects as viewed by the business analysts and case workers. In this section, we discuss how IBM Case Manager services organizes and manages those objects as data.

Figure 5-11 on page 103 shows the simplified IBM Case Manager implementation architecture.

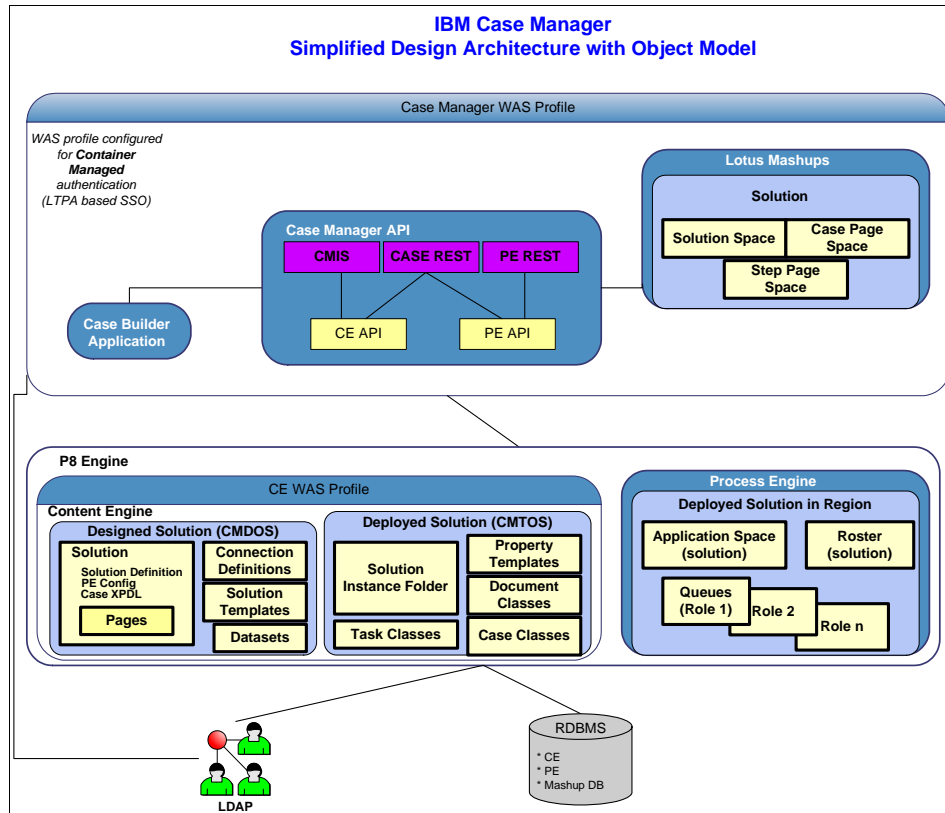


Figure 5-11 IBM Case Manager high level design with the case object model

IBM Case Manager organizes its objects into three main categories as follows:

- ▶ Spaces and pages (solution layouts).
- ▶ Design object store (solution packages or artifacts).
- ▶ Target environment (solution instances or deployed solutions). The target environment consists of one target object store and its associated PE region.

5.2.1 Spaces and pages

Spaces and pages are the layouts for the solutions. IBM Case Manager Client stores spaces and pages information in a Lotus Mashups database.

IBM Case Manager Client supplies the following default spaces:

- ▶ **Solution space:** The Solution space contains Work Page and Case Page layouts.

- ▶ Case Page space: The Case Page space contains pages for case layouts: Add Case and Case Details.
- ▶ Step Page space: The Step Page space contains pages for step layouts: Add Tasks and Work details.

For details about each page in the page space, see section 5.1.5, “Pages” on page 88.

5.2.2 Design object store

IBM Case Manager uses a design object store to organize and manage the solution packages and artifacts. A design object store is a CE object store with IBM Case Manager addons. There are two kinds of addons: design object store addons and target object store addons.

CMAC installs IBM Case Manager design object store addons as part of configuring an IBM Case Manager environment. CMAC also creates a folder structure for IBM Case Manager to organize IBM Case Manager solution packages and artifacts under.

Figure 5-12 on page 105 displays the root folder structure for IBM Case Manager in a design object store.

A design object store contains following artifacts:

- ▶ Solution package

A solution package is a collection of solution definition files (SDFs), PE configuration file, PE workflow definition files (XPDL), and pages (“Pages”). A solution package is stored under the Solutions folder in a design object store. For definition of SDF, PE configuration file, XPDL, and “Pages”, see “Solution package” on page 82.
- ▶ Solution template

A solution template is a collection of IBM Case Manager assets that can be customized and extended to build a complete solution. A solution template is stored in the Solution Templates folder.
- ▶ Connection definition

A connection definition specifies the target environment to which an IBM Case Manager solution is deployed. It contains the information about PE connection point, a Mashup URI, and a logical to physical page mapping. Using PE connection point, IBM Case Manager can discover the target object store and PE region number.

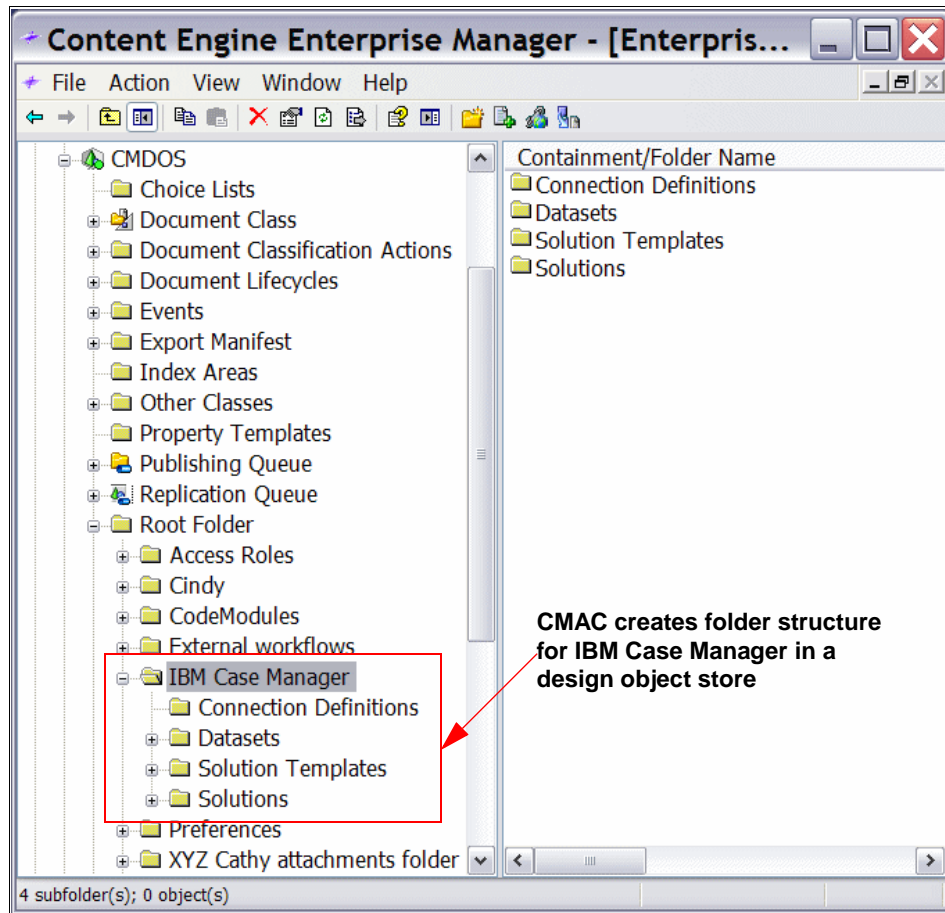


Figure 5-12 Design object store

5.2.3 Target environment (target object store and PE region)

The target environment consists of one target object store and its associated PE region. A target object store is a CE object store with IBM Case Manager add-ons required for a target object store. CMAC installs IBM Case Manager target object store add-ons as part of configuring an IBM Case Manager environment. CMAC also creates a folder structure for IBM Case Manager to organize deployed solutions.

Figure 5-13 on page 106 displays the root folder structure for IBM Case Manager in a target object store.

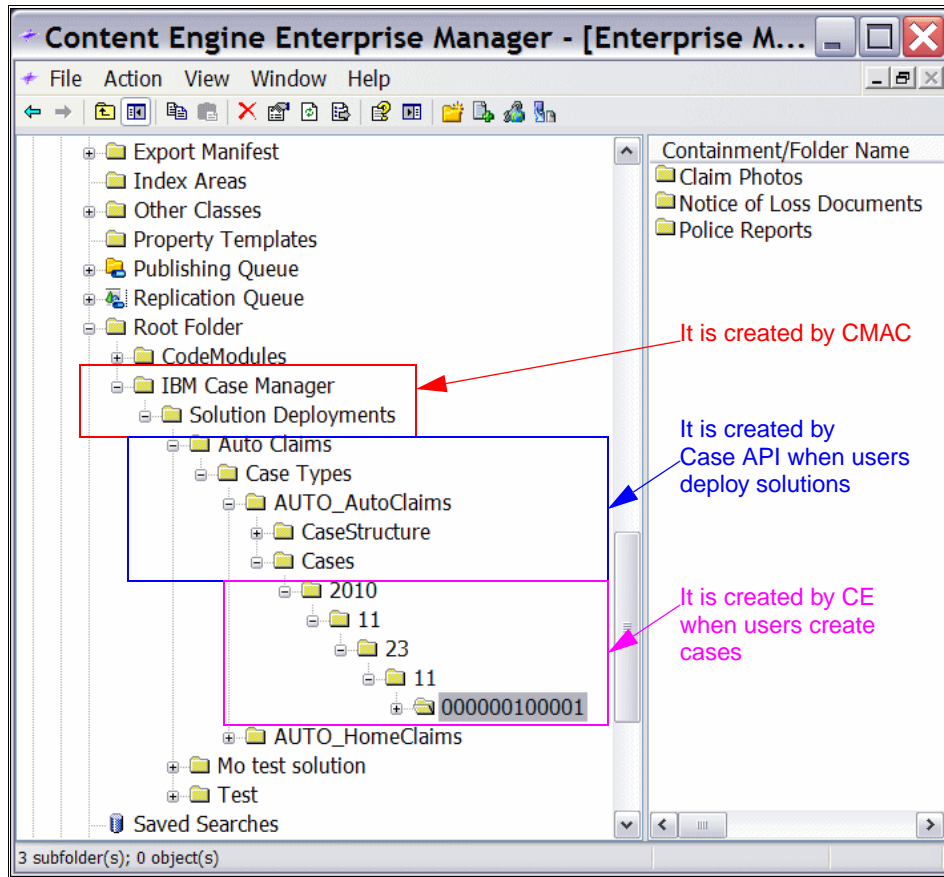


Figure 5-13 Target object store

A target object store contains the following artifacts for a deployed solution:

- ▶ Deployed solution folder

A deployed solution folder is a folder structure for a deployed solution in target object store. Case instances are created under this structure.
- ▶ Case class

A case class is a representation for a case type in a solution.
- ▶ Document class

A document class is a definition of a document type.
- ▶ Property template

A property template is definition of a property type.

- Task class

A task class is a definition of a task type.

- Subscription

A subscription relates a case or task event condition to corresponding Content Engine event actions.

Each target object store associates with a PE region. A PE region stores process data for the solutions. When the users deploy the solutions, IBM Case Manager API transfers the PE configuration information and workflow collections for the solution to the PE region. Process Engine metadata includes application space, roster, event logs, queues, roles, in-baskets, and workflow classes. Figure 5-14 shows the sample PE configuration and workflow definitions in a PE region after users deploy the solutions.

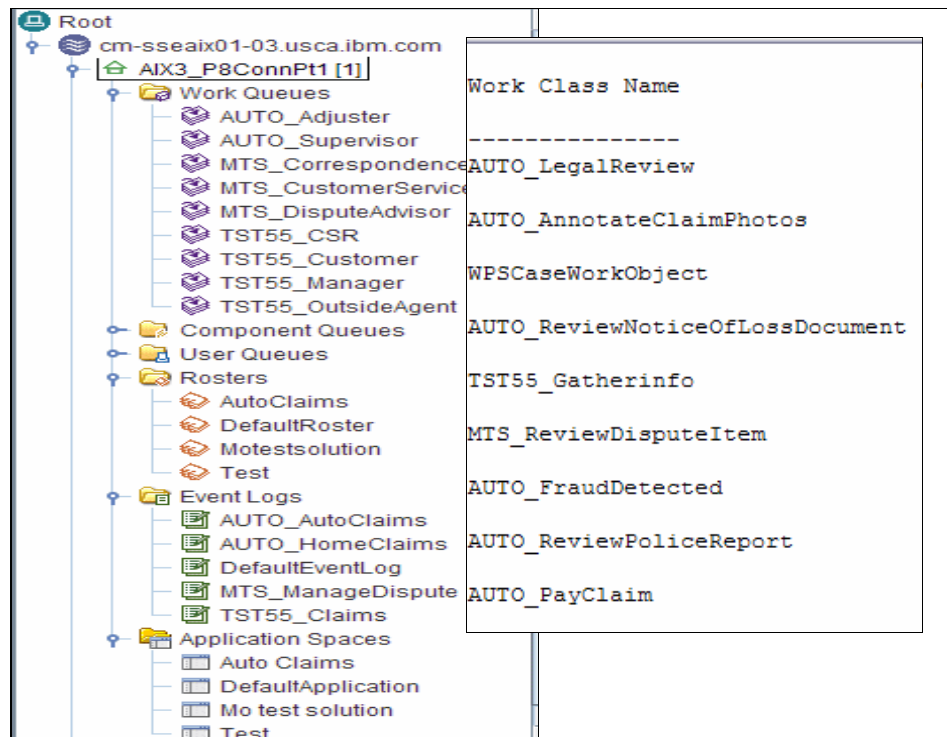


Figure 5-14 Sample region after users deploy the solutions

5.2.4 Solution deployment process

The IBM Case Manager API handles solution deployment requests from IBM Case Manager Builder or from custom applications using the IBM Case REST

API. In this section, we highlight the operations the IBM Case Manager API performs during the deployment process.

Figure 5-15 shows the summary details of the deployment flow for a solution.

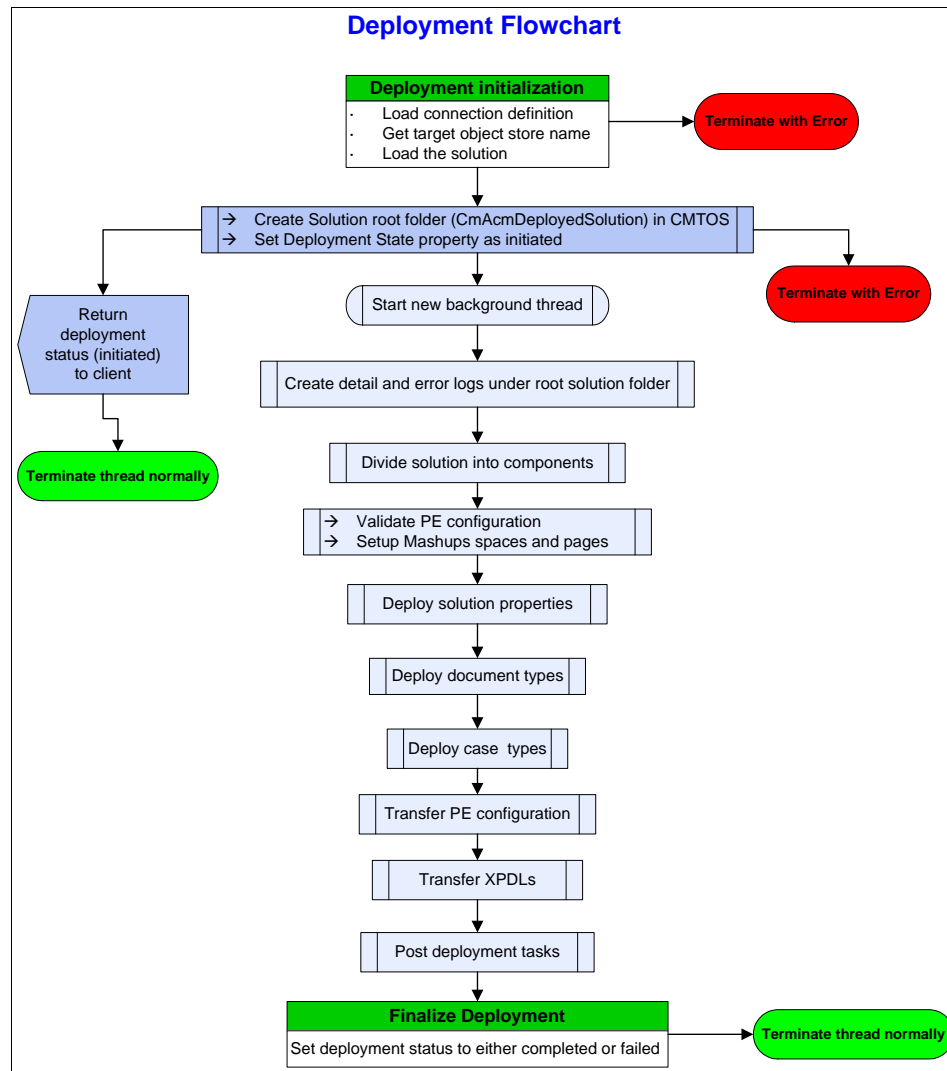


Figure 5-15 Solution deployment flowchart

In general, the IBM Case Manager API executes all the operations required for deploying a solution. IBM Case Manager only terminates the process for unrecoverable errors such as the following:

- ▶ Failure to load a connection definition
- ▶ Failure to retrieve target object store name associated with a PE region specified in the PE connection point. The PE connection point is in a connection definition.
- ▶ Failure to load a solution definition file (SDF) for a solution.
- ▶ Failure to create a solution root folder in a target object store.

For all other errors, the IBM Case Manager API continues with the deployment process after logging the errors in the solution's error deployment log. If there are no errors in the deployment, the error deployment log is empty. In addition, the IBM Case Manager API records all operations and messages, including error messages in the solution's detailed deployment log to make troubleshooting solution deployment issues easier.

Most of the operations in Figure 5-15 on page 108 are self-explanatory. There are a couple of operations in the flowchart that deserve more explanation. We discuss them in the following section.

Create solution root folder

When a solution is deployed, besides creating CE and PE metadata such as property templates, document classes, process queues, workflow definitions, and so forth, the IBM Case Manager API also creates a deployed solution folder structure in the target object store.

Figure 5-16 on page 110 displays the deployed solution folder structure for a sample solution Auto Claims.

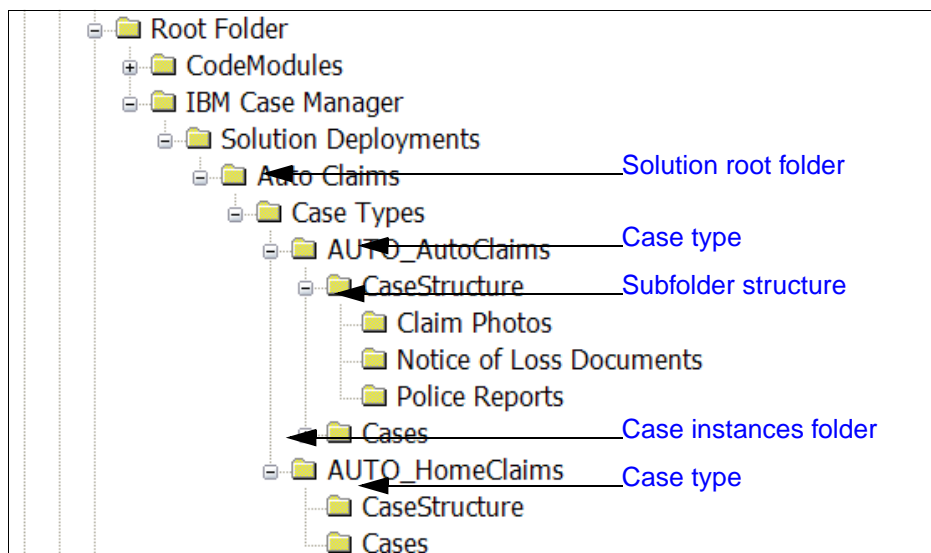


Figure 5-16 Deployed solution folder sample in a target object store

In Figure 5-16, Auto Claims is a solution root folder of type CmAcMDeployedSolution, a subclass of the Folder class. The CmAcMDeployedSolution class is part of the set of target object store add-ons. IBM Case Manager Administration Client installs the add-ons when users configure the environment for IBM Case Manager. See Figure 5-1 on page 80 for the property definitions of the CmAcMDeployedSolution class.

Under a solution root folder, IBM Case Manager API creates other folders such as the following:

- Case type name

The name of the folder is *<solution prefix>_<normalized version of case type name>*. The normalized version of the case type name contains only characters that are valid as a folder name in CE. The folder class is CmAcMDeployedCaseType, a subclass of Folder.

Note: If a user creates a folder of *<solution prefix>_<normalized version of case type name>* type, IBM Case Manager creates a case of type *<case type name>*.

Table 5-5 on page 111 lists some of the properties of the CmAcMDeployedCaseType class used in IBM Case Manager.

Table 5-5 CmAcmDeployedCaseType properties

Property Name	Type	Description
Folder Name	String(255)	Symbolic name of a case type. Its name is <i><solution prefix>_<normalized case type name></i> .
Configuration	Long String	Case type configuration data: version series ID for XPDL associated with case type, Lotus Mashups physical ID for case pages, and property information for page views.
Associated Task class Id List	List of Ids	List of Ids for Task classes associated with the case type

► CaseStructure

When the business analysts design a case type, they can design a folder structure for that case type. When IBM Case Manager creates an instance for that case type, it also creates the same folder structure for that case instance under the CaseStructure folder of a deployed solution folder.

► Cases

The Cases folder contains the case instances. IBM Case Manager organizes the case instances under *YEAR / MONTH / DAY / HOUR* subfolders.

Set up Lotus Mashups Spaces and Pages

IBM Case Manager creates Lotus Mashups spaces and pages during solution deployment. IBM Case Manager uses separate methods to create the spaces and pages depending on whether the environment is a production or a development environment.

In a production environment, IBM Case Manager assumes that, in the Pages folder of a solution in a design object store, the Page objects representing the Lotus Mashups spaces have content. IBM Case Manager uses that content to create spaces and pages in Lotus Mashups when it deploys the solution in a production environment

In a development environment, if the Page objects have content, then IBM Case Manager uses those contents to create spaces and pages in Lotus Mashup when it deploys the solution. Otherwise, it creates new default pages and spaces for the solution using the default templates present in the Lotus Mashups.

Figure 5-17 on page 112 shows the logic for creating the spaces and pages. The figure also displays the content of a connection definition and the Pages folder.

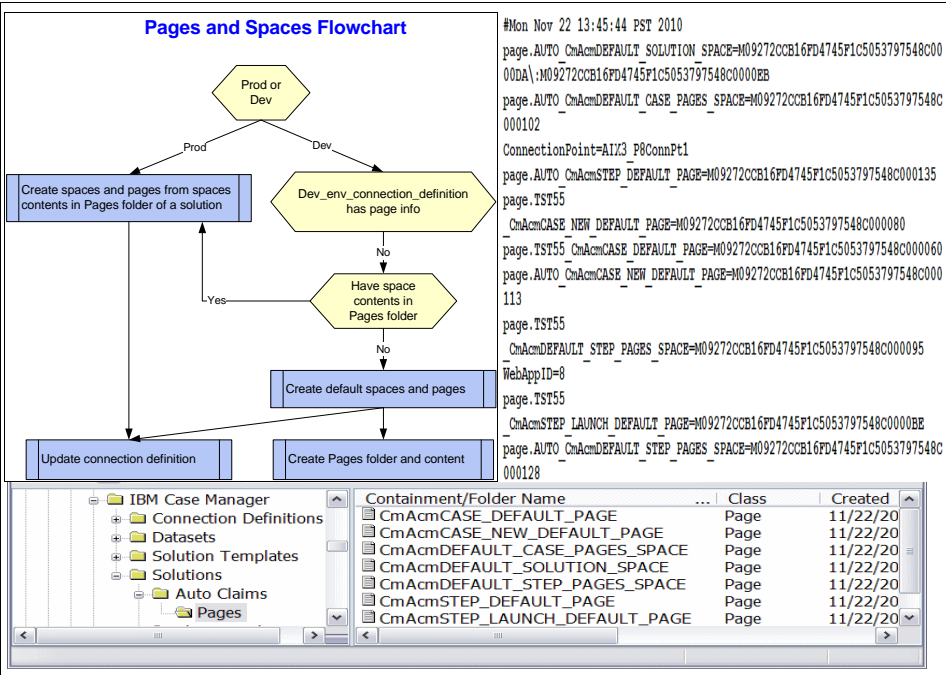


Figure 5-17 Create pages and spaces flowchart

Note: If deploying a solution in a production environment or if the solution you are deploying contains customization for pages and spaces, run the Export Pages task from CMAC to export pages and spaces from Lotus Mashups to the Pages folder of the solution prior to migrating the solution package to the environment it will be deployed in.

Deploy Case Types

For each case type, IBM Case Manager creates case class derived from Case Folder class (CmAcmeCaseFolder). The symbolic name of a case class has the naming convention of <solution prefix>_<normalized case type name>.

The case class contains all case properties defined by a Business Analyst for a case type. A case class inherits the Initiating Document (CmAcmeInitiatingDocument) property. An initiating document (also called a starting document) in IBM Case Manager Builder specifies a document type that triggers the creation of a case class.

As part of deploying a case type, IBM Case Manager needs to deploy all the task types belong to a case type. See “Deploy Task Types” on page 113 for more details on the deployment of a task type.

Deploy Task Types

For each task type in a case type, IBM Case Manager creates the task class and its trigger, which involves several validation and configuration steps. Specifically, IBM Case Manager performs the following actions:

- ▶ Validate the preconditions: Case Manager makes sure the precondition specified for a task is valid such as follows:
 - The property expression is a valid expression.
 - The filing document type exists.
 - If a solution is being redeployed, the precondition is the same as in the previous deployment.
- ▶ Validate the task groups: In this operation, IBM Case Manager ensures the case type definition defined in the solution definition file (SDF) follows the restriction for a group task such as follows:
 - A repeatable or user-creatable task cannot belong to a group.
 - A task belongs to only one group.
- ▶ Validate the user creatable tasks.
- ▶ Ensure there is a workflow for each task: If a task does not have an associated workflow, IBM Case Manager logs a warning message in the solution error log. However, IBM Case Manager does not consider this error as unrecoverable.
- ▶ Create a new task class.
- ▶ Configure the task properties.
- ▶ Configure workflow subscriptions. The subscription indicates which workflow IBM Case Manager using CE event handler launches when a task is in the Working state. For the Task state information, see “Task states” on page 100.

Figure 5-18 on page 114 shows a sample properties of the task class and the values of the property of a sample task instance.

Property	Data Type	Is Nam
PreCondition	String (8)	
PostCondition	String (8)	
Date Started	DateTime (3)	
Date Completed	DateTime (3)	
Last Failure Reason	String (8)	
Task Name	String (8)	True
Disabled State	Integer (6)	
Required State	Integer (6)	
Launch Mode	Integer (6)	
Launch Group	Integer (6)	
Group Mode	Integer (6)	

Property Name	Property Value
1 This	[Object (High Risk Escalate)]
2 Task State	1
3 Coordinator	[Object (000000100001)]
4 Task Name	High Risk Escalate
5 Disabled State	0
6 Required State	0
7 Launch Mode	1
8 Group Mode	1
9 Replication Group	<Value Not Set> [Object]
10 External Replica Id	[List of Objects]
11 Creator	P8Admin

Property Name	Property Value
18 Owner	cn=P8Admin,o=acm
19 Permissions	[List of Objects]
20 Active Markings	[List of Objects]
21 Successors	[Enum. of Objects]
22 Predecessors	[Enum. of Objects]
23 PreCondition	Coordinator SATISFIES (AUTO_HighRi
24 PostCondition	<Value Not Set> [String]
25 Date Started	<Value Not Set> [Date/Time]
26 Date Completed	<Value Not Set> [Date/Time]
27 Last Failure Reason	<Value Not Set> [String]
28 Launch Group	1

Task name

Launch mode

Task precondition

Figure 5-18 Sample properties of a task class

5.3 P8 Engine usage by IBM Case Manager

In IBM Case Manager, each task has a workflow associated with it. A workflow in IBM Case Manager environment derives from the Case WorkObject class introduced in P8 PE 5.0.

When a task is in the Working state, IBM Case Manager launches a workflow associated with it. A task enters the Working state if one of the following is satisfied:

- ▶ A user creates a user creatable task.
- ▶ A user starts a manual task currently in the Ready mode.

- ▶ A precondition is satisfied for an auto-launch task.

See “Task states” on page 100 for more details on the task states.

In this section, we discuss the CE and PE enhancements leveraged by IBM Case Manager.

5.3.1 Workflow data fields

To provide a tighter integration between CE and PE, starting with the PE 5.0 release, case properties can be accessed directly from a workflow instance. Case properties can be used in expressions of step parameters, route conditions, assign system instructions, and so forth.

In the IBM Case Manager Builder, case properties are used to define in-basket columns and are exposed as step parameters. Work item information displayed in the in-baskets are workflow field data, not case properties. Because of this, IBM Case Manager Builder adds “shadow” data fields containing a workflow definition using the same symbolic name and type as the corresponding case properties. When IBM Case Manager launches a workflow (that is, creates a workflow instance), IBM Case Manager initializes the “shadow” data fields from the current case property values. When the business analysts define steps in the Step editor, IBM Case Manager Builder creates post assignments for any writable step parameter that references a case property. These post assignments update the “shadow” data fields with their corresponding case property values. This keeps the “shadow” data field values in synchronized with their case properties.

IBM Case Manager Builder also adds additional data fields required by IBM Case Manager components as follows:

- ▶ SolutionIdentifier

The SolutionIdentifier is a string-valued field containing the value *<solution prefix>_<solution name>*. IBM Case Manager Client uses the SolutionIdentifier to identify which solution a work item comes from when displaying the personal in-basket.

- ▶ F_CaseFolder

F_CaseFolder identifies the case class and its instance. PE uses the F_CaseFolder to retrieve and update the values for the case properties.

- ▶ F_CaseTask

F_CaseTask identifies the task class and its instance. PE uses F_CaseTask to update the state for a task.

5.3.2 Workflow attachments

From the Step Editor of IBM Case Manage Builder, business analysts define the attachments for a workflow and assign them to a step as the step parameters. If a task has a filing precondition, the first attachment assigned to a step becomes the workflow initiating attachment. The initiating attachment is added as a read/write parameter for the launch step of a workflow. For more information about the workflow initiating attachment, consult the IBM FileNet P8 Information Center at the following URL:

<http://publib.boulder.ibm.com/infocenter/p8docs/v4r5m1/index.jsp?topic=/com.ibm.p8toc.doc/welcome.htm>

When IBM Case Manager launches the workflow using CE event handler, CE assigns the filing document for a task as the value of the attachment parameter of the launch step of the workflow.

Note: Because PE only supports a single attachment as an initiating attachment, users need to edit the solution in IBM FileNet P8 Process Designer to change the initiating attachment from an attachment array to a single attachment.

5.3.3 Step parameters and post assignments

PE uses step parameter expressions to retrieve and update values for case properties. PE uses step post assignments to update PE “shadow fields.” PE retrieves the values of referenced case properties and assigns the values to the corresponding step parameters when PE opens a work item. PE updates the values of case properties with the values of the corresponding step parameters when case workers or the external services save or complete a work item. PE only updates the case properties with the values of the corresponding step parameters if the step parameters have read/write or write permission.

Figure 5-19 on page 117 shows a sample with step parameter expressions and step post assignments. The expressions reference the case properties by `F_CaseFolder.<property name>`.

Parameters				
Name	Type	Access Rights		Expression
AUTO_LossAmount	Float	Read/Write		F_CaseFolder.AUTO_Loss...
AUTO_HighRisk	Boolean	Read/Write		F_CaseFolder.AUTO_High...
AUTO_ClaimDate	Time	Read/Write		F_CaseFolder.AUTO_Clai...
AUTO_PolicyNumber	Integer	Read/Write		F_CaseFolder.AUTO_Polic...
AUTO_CustomerName	String	Read/Write		F_CaseFolder.AUTO_Cust...
	Boolean	Read/Write		

Field Assignments	
Name	Expression
AUTO_LossAmount	F_CaseFolder.AUTO_LossAmount
AUTO_HighRisk	F_CaseFolder.AUTO_HighRisk
AUTO_ClaimDate	F_CaseFolder.AUTO_ClaimDate
AUTO_PolicyNumber	F_CaseFolder.AUTO_PolicyNumber
AUTO_CustomerName	F_CaseFolder.AUTO_CustomerName

Figure 5-19 Sample step parameters and post assignments

5.3.4 Workflow launching

The method IBM Case Manager uses to launch a workflow associated with a task depends on a launch mode of the task. There are three launch modes:

- Auto launch

This mode is for a task starting automatically. The CE event handler is responsible for creating and starting a task when it creates a case instance. CE starts the task if it has no precondition or the precondition is satisfied. When launching the workflow, the CE event handler initializes the workflow data fields with the values from the case properties.

- Manual launch

This mode is for tasks starting manually. The tasks must be in the Ready state before users can start the task. When users start the task, IBM Case Manager, using CE event handler, launches the workflow after initializing the workflow data fields with the values from the case properties.

- User

This mode is for a user-creatable task. When users click the **Add Task** button in IBM Case Manager Client, IBM Case Manager Client presents the users with the Add Task window for the users to edit the workflow data fields. The Add Task window only displays the workflow data fields that are part of the step parameters of the launch step for a workflow. For a workflow associated with a user-creatable task, business analysts can edit the launch step from

the Step Editor of IBM Case Manager Builder when designing a workflow definition.

IBM Case Manager Client updates the corresponding case properties with the parameter values and launches the workflow using the IBM Case Manager API.

For more details on the launch mode, see 5.1.6, “Task types” on page 96.

5.3.5 Workflow processing and task state

PE updates the state of a task associated with a workflow during workflow processing to one of the following task states:

- Failed

If an exception occurs, PE sets the state of the task to Failed. When the error is rectified, PE clears the exception which resets the task state back to Working.

If users terminate the workflow abnormally, such as if they delete all the work items for a workflow, then PE sets the task state to Failed and the task property Disabled State to DISABLED_ABORTED.

- Completed

If a workflow is completed normally, PE sets the state of the task to Completed.

- Working

This is the initial state of a task when a workflow is launched. We assume that the workflow is in progress when a task is in the Working state.

5.4 WebSphere Process Server integration

Case Manager tasks are implemented using the IBM Case Manager Builder step editor. If you want to use more advanced BPM features, IBM Case Manager allows editing the task steps using the Process Engine Process Designer. In both cases, the resulting process definitions are stored in the XPDL file within the solution package. When a solution is deployed, these process definitions are transferred to the target environment.

Another option is to implement a task as a BPM process running in the WebSphere Process Server (WPS). For each such task implementation, IBM Case Manager Builder creates an interface process fragment in Process Engine. This interface process invokes the WPS process using a web services call. The

WPS process is either called synchronously using a single invoke step or asynchronously using a sequence of invoke and receive steps in the PE interface process.

The invoke message includes the service endpoint where WPS has to send the reply message. This message also includes the correlation identifier allowing the PE to match the incoming message to the correct waiting work item. After receiving the reply message, a system step updates the case properties mapped to values returned by the WPS service call.

To implement a WPS task you create an empty task using IBM Case Manager Builder. WebSphere Integration Developer (WID) is used to discover this empty task and to implement the WPS process. After pointing WID to the correct Case Manager design object store, WID lists all solutions available in that object store. From there you navigate to the appropriate case type and select the task to implement.

WID creates a skeleton module that you can then use to implement the process. From the list of properties available for the selected case type you map the required properties as input or output parameters to the process implementation. Having defined the process, WID updates the XPDL in the Case Manager solution package. This updated XPDL includes the interface process with the required invoke step for the task and the WSDL for the web services call to invoke the WPS process.

At run time, the web service invoke requests in the PE WSRequest queue are managed by the PE Component Manager. Component Manager allows configuring WPS credentials if the default Component Manager credentials are not valid for the WPS connection.



Part 2

Setting up IBM Case Manager environment

This part covers setting up IBM Case Manager environment and consists of multiple chapters for setting up Case Manager development environment, production environment, and validating the environment.

Attention: We strongly suggest reading (and following the exercises provided within) the chapters in the following order to complete and understand the overall set up process:

1. Chapter 6, “Set up overview and installation” on page 123
2. Chapter 7, “Configuring Case Manager development system” on page 173
3. Chapter 8, “Validating Case Manager development system” on page 223
4. Chapter 9, “Configuring Case Manager production system” on page 261



Set up overview and installation

This chapter provides an overview of setting up and configuring IBM Case Manager with an existing FileNet P8 system. It also describes the steps required to install Case Manager system.

This chapter covers the following topics:

- ▶ IBM Case Manager installation overview
- ▶ Preparing IBM FileNet P8 Platform for Case Manager
- ▶ Installing IBM Mashup Center
- ▶ Installing Workplace XT for Case Manager
- ▶ Installing Case Manager
- ▶ Installing FileNet P8 client files

Attention: This chapter describes only a portion of the steps required to set up a complete Case Manager environment. We strongly suggest reading (and following the exercises provided within) the following chapters in the given order to complete and understand the overall set up process:

1. Chapter 6, “Set up overview and installation” on page 123
2. Chapter 7, “Configuring Case Manager development system” on page 173
3. Chapter 8, “Validating Case Manager development system” on page 223
4. Chapter 9, “Configuring Case Manager production system” on page 261

6.1 IBM Case Manager installation overview

IBM Case Manager uses FileNet P8 to store and access content and solution artifacts. The design environment and production environments must be in separate P8 domains.

There are two basic architectures supported for case management installations:

- ▶ Single system architecture: all components, including product prerequisites such as FileNet P8, DB2, and WebSphere Application Server, reside on the same system
- ▶ Distributed system architecture: components are distributed across two or more systems

The single system architecture is only recommended for development environments or small scale production implementations. For single system installs, you have the option of using the IBM Case Manager Platform Installation Tool (CMPIT), a comprehensive installer that includes all the required components. The CMPIT installer includes the following components:

- ▶ IBM Tivoli® Directory Server 6.2
- ▶ IBM DB2 9.7 Fix Pack 1
- ▶ IBM Lotus Mashup Center 3.0
- ▶ IBM FileNet P8 Content Engine 5.0
- ▶ IBM FileNet P8 Content Engine Client 5.0
- ▶ IBM FileNet P8 Process Engine 5.0
- ▶ IBM FileNet P8 Process Engine Client 5.0
- ▶ IBM FileNet P8 Workplace XT 1.1.4.7
- ▶ IBM Case Manager 5.0

For a distributed environment, the IBM Case Manager components are installed on a separate system from FileNet P8. This configuration is recommended for production systems.

The installation procedures presented in this chapter are for a development configuration consisting of two servers. Figure 6-1 on page 125 shows the distribution of the components across the two servers.

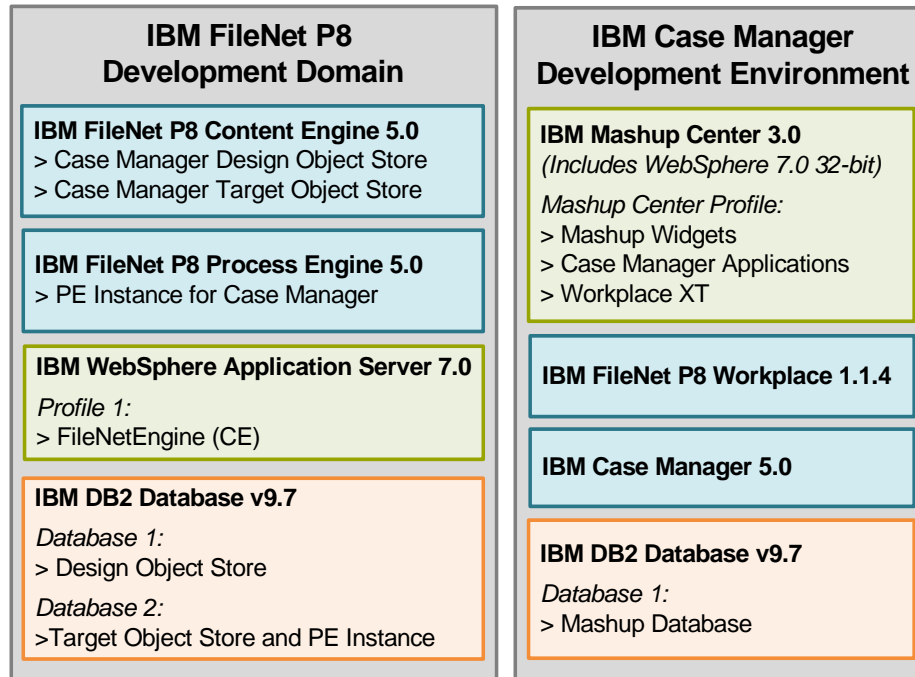


Figure 6-1 Two server Case Management configuration

6.1.1 Plan and prepare for IBM Case Manager security

IBM Case Manager utilizes users and groups from your Lightweight Directory Access Protocol (LDAP) repository. For our test environment, we used an existing Tivoli Directory Server repository residing on a separate server for our LDAP services. This Tivoli server is not shown in our system configuration diagram in Figure 6-1.

For your system, you must plan for separate group and user permission levels. For more information about this task, see the Planning for IBM Case Manager security topic at the following URL:

<http://publib.boulder.ibm.com/infocenter/casemgmt/v5r0m0/topic/com.ibm.casemgmt.installing.doc/acmpi031.htm>

6.1.2 Plan and prepare IBM Case Manager application servers

When configuring IBM Case Manager in a distributed environment, install IBM Lotus Mashup Center 3.0 on the IBM Case Manager server (see 6.3, “Installing

IBM Mashup Center” on page 133). Mashup Center includes a 32-bit implementation of WebSphere Application Server 7.0.

As part of the Mashup Center installation, a WebSphere profile named `mm_profile` is created on the Mashup Center server. The Mashup Center installer deploys all the widget applications to this profile’s Java Virtual Machine (JVM). Later in the Case Manager configuration procedure, you will deploy the Case Manager Builder, the Case Manager Client, and Workplace XT applications to this same JVM.

The Content Engine application (FileNetEngine) can reside in its own JVM on the Content Engine server as noted in Figure 6-1 on page 125.

6.1.3 Plan and prepare IBM Case Manager databases

Each Content Manager object store you configure for your Case Manager environment requires a database. There are two types of object stores used by Case Manager: design object stores and target object stores. Each Case Manager/P8 Domain requires one (and only one) design object store used for storing your solution definition files. Target object stores are used to store runtime case solutions. You can have multiple target object stores per Case Manager/P8 Domain, dependent on how many solutions you have deployed in your environment.

Support for multiple instances of Process Engine on a single system was introduced in version 5.0 of IBM FileNet P8 Platform. This is important for Case Manager configurations because each target object store must be associated with its own PE instance. When you deploy a Case Manager solution, data is written to both the target object store and its associated PE instance. Therefore, for Case Manager, the target object store and the PE instance must share the same database and schema owner. See Table 6-1 for sample table space names and users created for a combined target object store and PE database using DB2.

Table 6-1 Sample database objects for a combined target object store / PE database

Table Space Name	Grant use to table space for following users:	Usage
OS_DATA_TS	OS_DB_USER	Target object store and PE data
USR_TEMP_TS	OS_DB_USER	Target object store and PE temp
PE_INDEX_TS	OS_DB_USER	PE index

Table Space Name	Grant use to table space for following users:	Usage
PE_BLOB_TS	OS_DB_USER	PE large object

Table 6-2 shows sample database tablespaces for a design object store. Note you cannot use the same object store for both the target and design object store. Design and target objects must be in separate object stores.

Table 6-2 Sample database objects for a design object store database

Table Space Name	Grant use to table space for following users:
OS_DATA_TS	OS_DB_USER
USR_TEMP_TS	OS_DB_USER

Note: Although IBM Lotus Mashup Center requires a database, do not create this database prior to installing Mashup Center. You must use Mashup Center tools to generate database scripts specific to your environment. Steps to create the database scripts are outlined in section 6.3.3, “Configure Mashup Center database” on page 143, and are executed after Mashup Center is installed.

6.2 Preparing IBM FileNet P8 Platform for Case Manager

To prepare an IBM FileNet P8 Platform environment for integration with IBM Case Manager, you need to complete the following tasks:

- ▶ Create required Case Manager object stores
- ▶ Configure a Process Engine instance for use with Case Manager

The following sections provide guidelines for executing these preparation tasks.

6.2.1 Create object stores for Case Manager

Case Manager for a development environment requires a minimum of two object stores:

- ▶ Case Manager Design Object Store (CMDOS): an object store used to store case definitions and configurations. There can be only one design object store per P8 domain.

- Case Manager Target Object Store (CMTOS): an object store used to store runtime case solutions. There can be multiple target object stores per P8 domain.

Consider the following guidelines when creating the Case Manager object stores:

- Select the default Content Store storage type. For a development environment where the number of objects stored is likely to be small, use **Database Storage Area** for both the CMDOS and CMTOS as shown in Figure 6-2. For production environments, consider using a **File Storage Area** or **Fixed Storage Area**.

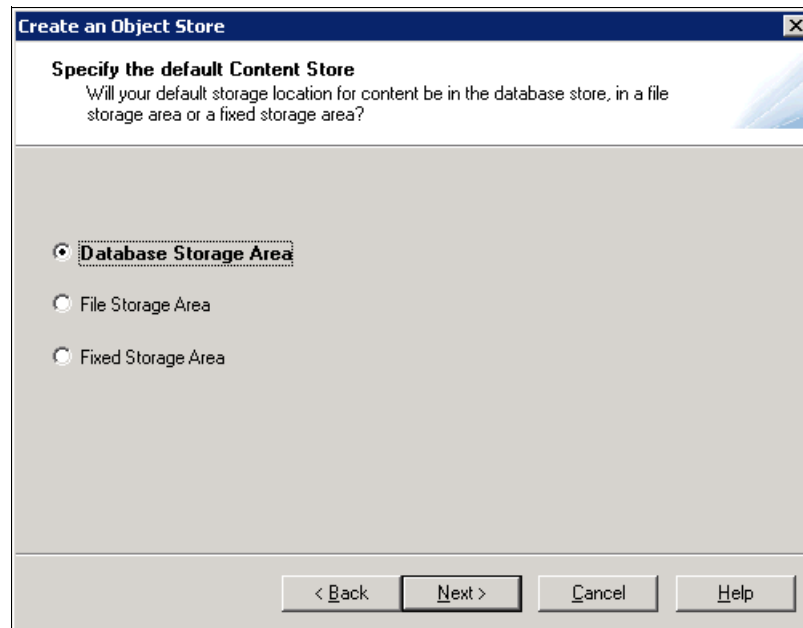


Figure 6-2 Object store creation wizard storage type options

- Grant LDAP users or groups assigned to the Business Analyst role administrative access to the Case Management object stores. This is only appropriate for Development environments.
- Grant LDAP users or groups assigned to other Case Management roles such as case viewers, case initiators, case workers, or case administrators, basic non-administrative access to the Case Management object stores. More specific access rights on individual Case Management folders and objects can be assigned after the solution is deployed.
- When selecting the AddOns for your object stores, you will note that the Case Management extensions are included in the list of available AddOns. You do not need to include the Case Manager extensions AddOns at this time. These

AddOns will be imported into your object stores later in this procedure when you configure your Case Management environment using the Case Management Administration Client (CMAC) tool.

As a reference, the Case Manager extensions AddOns that will be added for each object store type are shown in Table 6-3.

Table 6-3 Case Manager AddOns

Object Store Type	AddOns
Design	5.0.0 Case Manager Design Object Store Extensions
Target	5.0.0 Case Manager Target Object Store Extensions 5.0.0 Case Manager History and Analytics Extensions

6.2.2 Create Process Engine region ID for Case Manager

Use the FileNet Enterprise Manager SnapIn to define a region ID on the Content Engine. You will later create the same region on the Process Engine.

Table 6-4 shows the region ID parameters for our development system.

Table 6-4 Process Engine region ID parameters

Name	Value
Site	Initial Site
PE Server DNS Name	hq-maui
Naming Service Port	32776
Region Number	1
Region Password	filenet123

6.2.3 Create a Process Engine connection point

Use the FileNet Enterprise Manager SnapIn to define a connection point for accessing the isolated region dedicated to Case Management.

Table 6-5 shows the connection point parameters for our development system.

Table 6-5 Process Engine connection point parameters

Name	Value
Name	CM_Region1_CP

Name	Value
Description	Case Manager Region 1 Connection Point
PE Region Id	hq-maui,32776,1

6.2.4 Initialize the isolated region

The common method for initializing isolated regions is to use the Process Configuration Console applet in WorkplaceXT. However, because the WorkplaceXT application is not yet deployed, you must use the command line tool **peinit** to initialize your region. The syntax for the **peinit** command is:

```
peinit virtual_server_name -R region_id -p PE_server_DNS_name -Y
pe_region_admin+pe_region_admin_password
```

where:

- ▶ *region_id* identifies the isolated region number to be created and initialized on the Process Engine.
- ▶ *virtual_server_name* is the name of the virtual server you are defining. If you do not specify the virtual server name, this server name is defined as pesvr.default. If the configuration is for IBM Case Manager, create only one isolated region per database. The region is created and the base classes are transferred to the region.
- ▶ *PE_server_DNS_name* is the DNS name of the Process Engine server. This is the same name used to define the region on the Content Engine.

Example 6-1 shows the **peinit** command and results for the initialization of the isolated region for our development environment.

Example 6-1 Initializing a region using peinit

```
C:\>peinit default -R 1 -p hq-maui -Y P8Admin+IBMFileNetP8
```

```
Trace log options file 'C:\Program
Files\IBM\FileNet\ProcessEngine\data\pesvr.default\traceOptions' does not exist
Shutting down PE server on host 'hq-maui'...done.
Region initialized
Region key for PE Region [1] is updated.
Successfully updated key for CE regions with PE Server DNS Names=hq-maui
Create region completed
(Re)starting PE server on host 'hq-maui'...done.
peinit finished successfully
```

Verify the region has been created in Process Task Manager as shown in Figure 6-3.

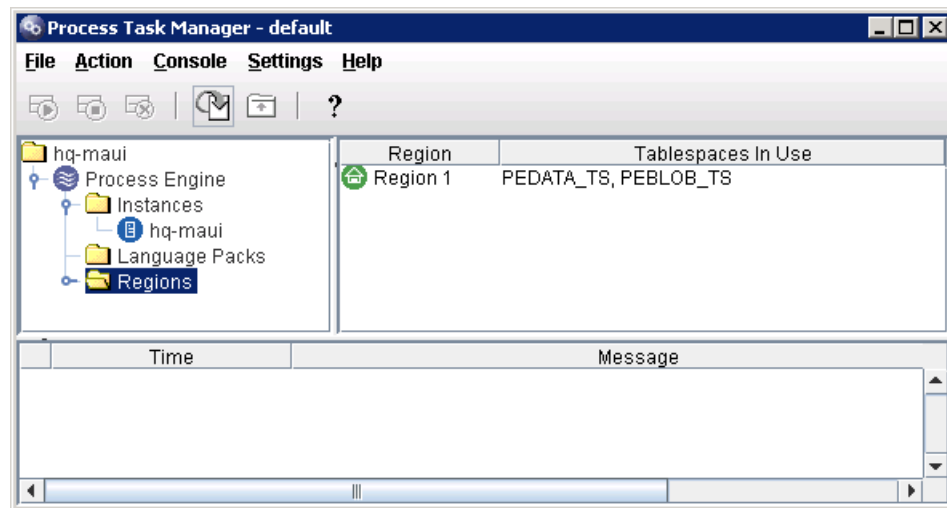


Figure 6-3 Regions view from Process Task Manager

6.2.5 Link target object store to isolated region

Run the following command to establish a link between the target object store and the isolated region;

```
peinit virtual_server_name -A region_id -n object_store_symbolic_name -Y
pe_region_admin+pe_region_admin_password
```

where:

- ▶ *region_id* identifies the isolated region number to be created and initialized on the Process Engine.
- ▶ *virtual_server_name* is the name of the virtual server you are defining. If you do not specify the virtual server name, this server name is defined as `pesvr.default`.
- ▶ *object_store_symbolic_name* is the symbolic name of the target object store you are linking to the isolated region.

Example 6-2 shows the **peinit** command and results for linking the target object store CMTOS to the isolated region used in our development environment.

Example 6-2 Linking target object store to isolated region using peinit

```
C:\>peinit default -A 1 -n CMTOS -Y P8Admin+IBMFileNetP8
```

```
Trace log options file 'C:\Program
Files\IBM\FileNet\ProcessEngine\data\pesvr.default\traceOptions' does not exist
Retrieving Object Store id for: CMTOS
Found Object Store id: {C248ABB2-7921-4DA3-B621-A7E8A0F69473}
PE API ORB pool minimum = 1, maximum = 10
(Re)starting PE server on host 'hq-maui'...done.
peinit finished successfully
```

6.2.6 Export LTPA key from Content Engine server

You must export the Lightweight Third Party Authentication (LTPA) key from the Content Engine server. This LTPA key will be used later in this procedure for configuring security between the Content Engine application and the Case Manager Builder application.

Complete the following steps to export the Content Engine LTPA security key.

1. Launch the WebSphere administrative console for the Content Engine server.
2. Browse to **Security** → **Global security**. Under the **Authentication** section on the right side of the window, click the **LTPA** link.
3. Set the **LTPA timeout** parameter to a value that is appropriate for your environment. The default is 120 minutes, or two hours.

Note: The value you enter for the LTPA timeout will affect the timeout settings you configure for the Case Manager Builder application later in this procedure. The Case Manager Builder timeout is configured using the custom property `cacheCushionMax`, which cannot be larger than 1/5 the LTPA timeout value. In our test Development environment, we configured the Case Manager Builder timeout for 12 hours, or 720 minutes. Therefore, we set the LTPA timeout to 3600 minutes, which is 720 x 5.

4. Type a password for the **Cross-cell single sign-on** option. Make note of this password. You must provide this password when importing the keyfile for Case Manager Builder.
5. Enter a value in the Fully qualified key file name field, such as `C:\LTPA_Keys\<ceserver>-keyfile`, where `<ceserver>` is the host name of your Content Engine server. Click the **Export keys** button. Verify a message similar to the following is displayed:

The keys were successfully exported to the file `<ceserver>_keyfile`.

6. Click **OK**. Then click **Save changes directly to the master configuration**.
7. Stop and restart the WebSphere Application Server for the Content Engine.

8. Copy the keyfile to the Case Manager server to a location such as `/opt/LTPA_Keys/<ceserver>-keyfile`.

6.3 Installing IBM Mashup Center

On the system where you plan to install IBM Case Manager, you must first install and configure IBM Mashup Center. The following sections describe how to install and configure IBM Mashup Center for Case Manager.

6.3.1 Planning for IBM Mashup Center

The following considerations should be taken into account when planning your Mashup Center installation:

- ▶ We recommend installing the IBM Mashup Center application using the **root** user account. You can change permissions post-install so that non-root users can start and stop the Mashup Center services.
- ▶ The Mashup Center installer requires approximately 1 GB of free space in the `/tmp` directory.
- ▶ Mashup Center requires approximately 3 GB of free space in the installation location, which by default, is `/opt/IBM/MashupCenter/3.0`. However, keep in mind that Workplace XT must be deployed to the same JVM as Mashup Center. Therefore, you should plan for at least 5 GB of free space combined.

Note: Although Mashup Center requires a relational database, do not create the database at this time. After Mashup Center is installed, you will run configuration tools to generate the SQL scripts required to create and configure the Mashup Center database for your environment.

6.3.2 Run IBM Mashup Center 3.0 Installation

Run the following steps to install IBM Mashup Center 3.0 on your Case Manager server:

1. Login to the server as **root**¹ user and browse to the location where the IBM Mashup Center installation media is staged. Start the IBM Mashup Center installer using the following command:

```
./install.sh
```

¹ IBM Mashup Center can be installed as a non-root user provided the user account has the proper rights and permissions. For the examples shown in this book, we installed as the root user.

2. Select the appropriate language from the drop-down list as shown in Figure 6-4. Click **OK** to continue.

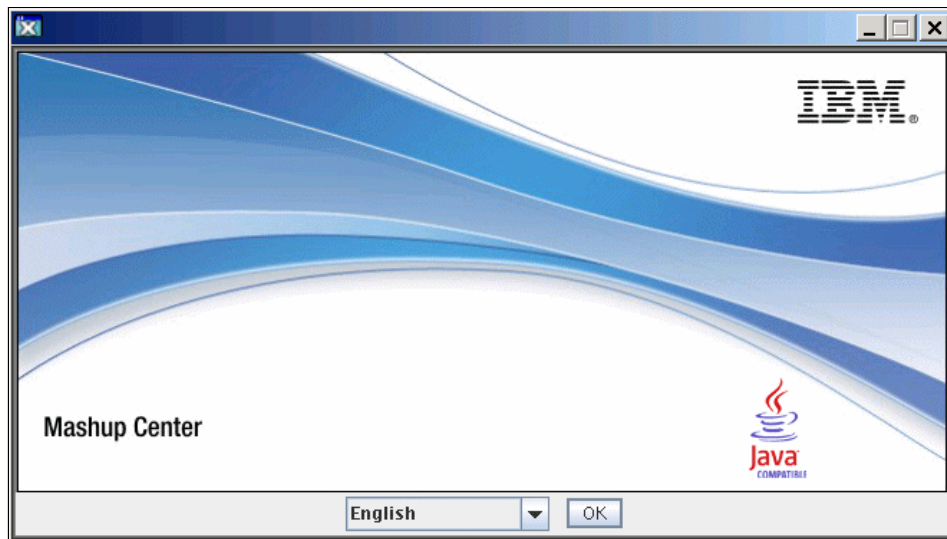


Figure 6-4 Mashup Center installer language settings

3. In the Welcome window (Figure 6-5 on page 135), click **Next** to continue.

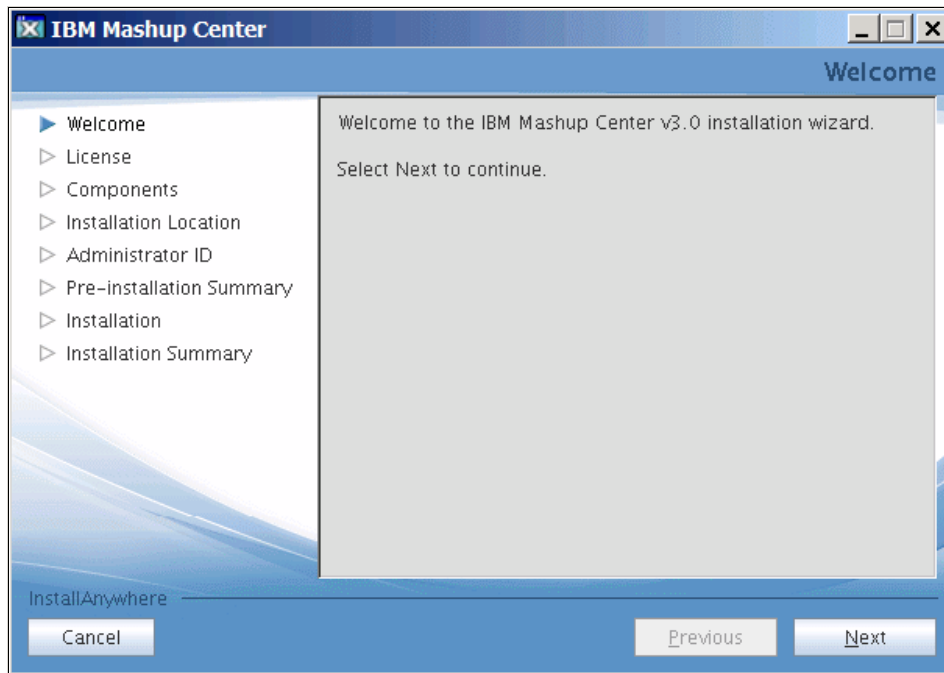


Figure 6-5 Mashup Center installer Welcome window

4. Review the license agreement terms and select the **I accept both the IBM and the non-IBM terms** radio button as shown in Figure 6-6 on page 136. Click **Next** to continue.

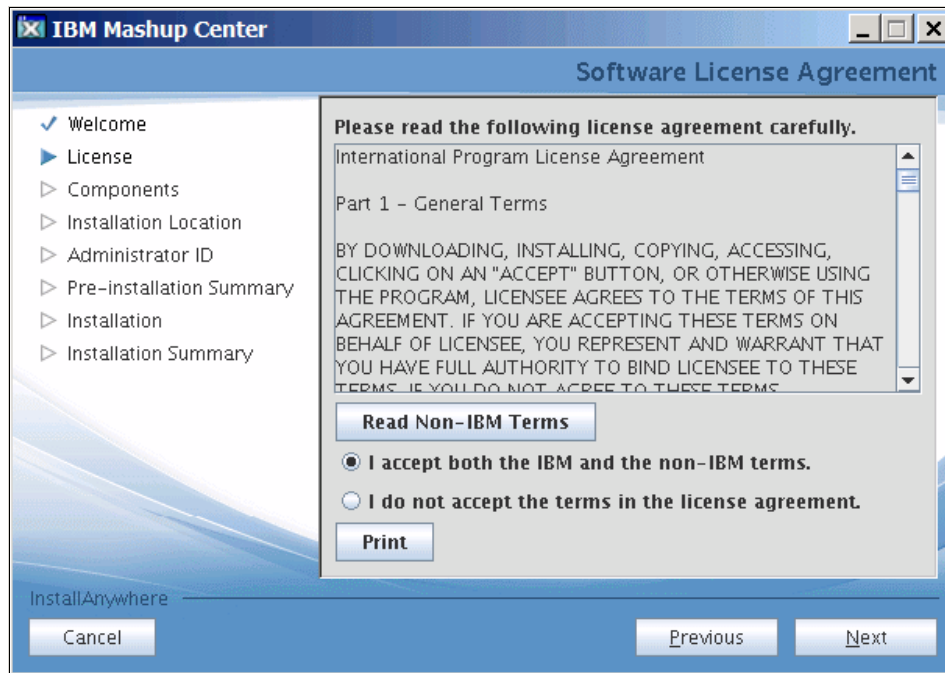


Figure 6-6 Mashup Center software license agreement

5. On the component selection window, select both the **Lotus Mashups** and **InfoSphere MashupHub** options, as shown in Figure 6-7 on page 137. Click **Next** to continue.

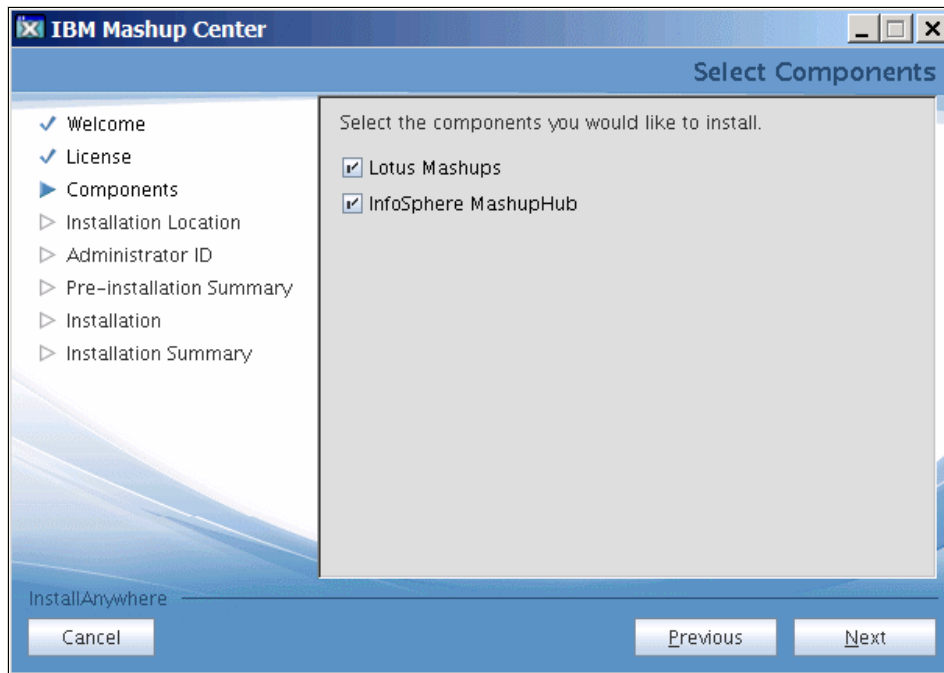


Figure 6-7 Mashup Center components required for Case Manager

6. Enter the directory where you want to install the Mashup Center software. The default location is `/opt/IBM/MashupCenter/3.0`, as shown in Figure 6-8 on page 138. Click **Next** to continue.

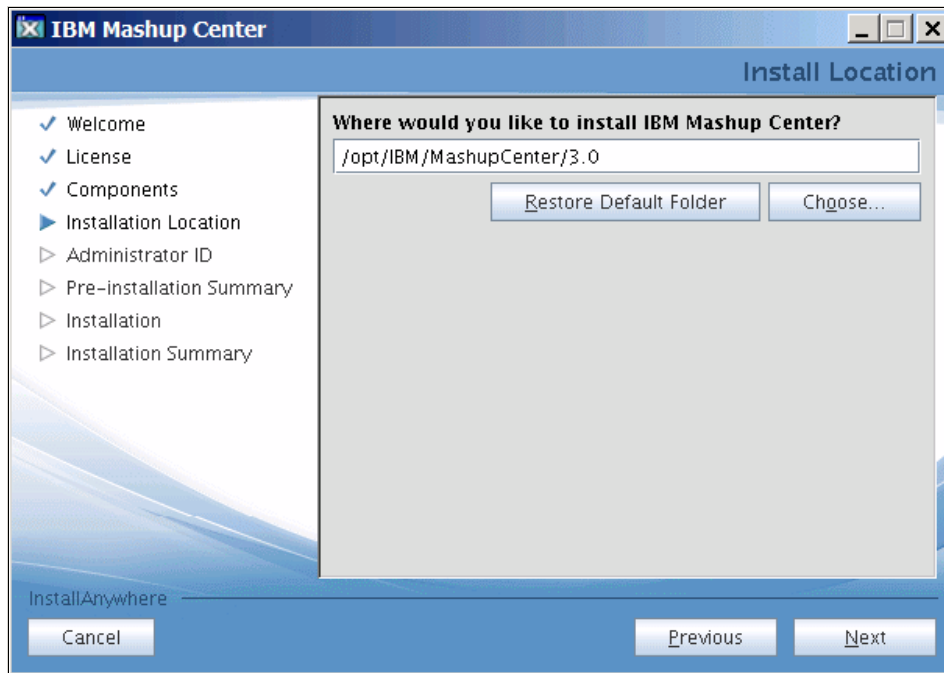


Figure 6-8 Mashup Center installation directory

7. Enter the Mashup Center administrator's ID and password as shown in Figure 6-9 on page 139. Click **Next** to continue.

Note: It is important that you make note of the Administrative user and password. You will be prompted for this username and password during the Mashup Center and Case Manager configuration.

The administrative username entered here must **not** already exist in the LDAP repository configured for your P8 domain.

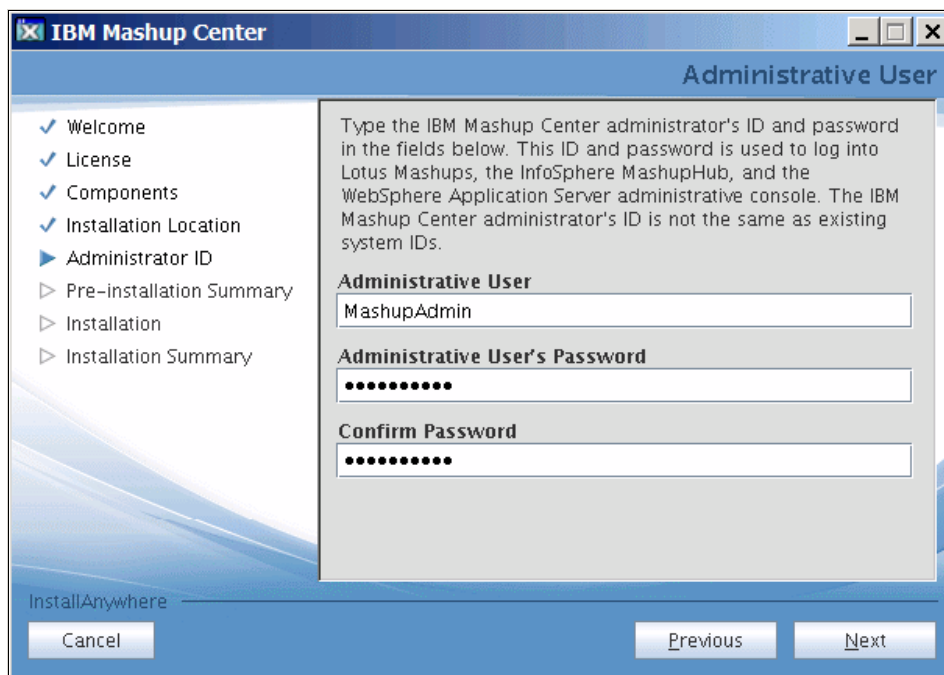


Figure 6-9 Mashup Center administrative username and password

8. Review the summary information as shown in Figure 6-10 on page 140. Click **Install** to begin the installation.

Note: The Mashup Center installation includes the installation of WebSphere Application Server, the creation of a WebSphere profile (mm_profile), and deployment of the Mashup Center applications. It can take several minutes for these installation tasks to complete. For example, in our test environment, the Mashup Center install took about forty minutes.

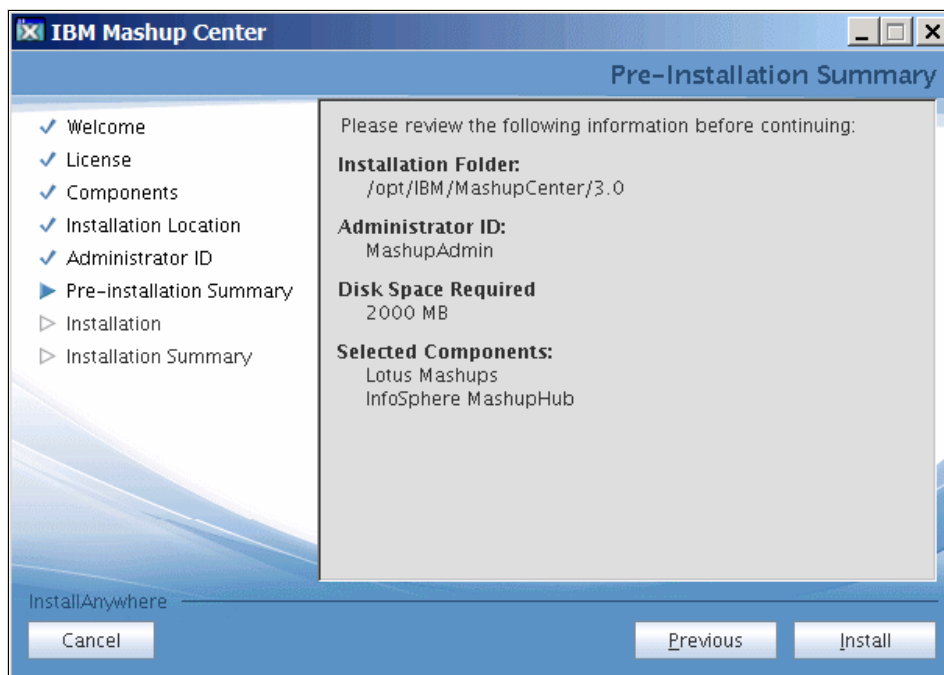


Figure 6-10 Mashup Center installation summary

9. When the installation is complete, click to clear the option to **Launch First Steps** as shown in Figure 6-11 on page 141. Click **Done** to exit the installer.



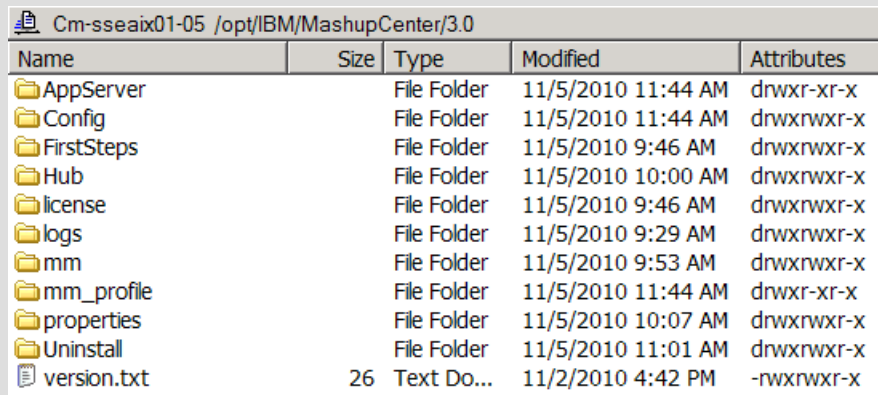
Figure 6-11 Mashup Center installation completion summary

Installation notes:

- The Mashup Center installation includes WebSphere base 32-bit software.
- A WebSphere profile, `mm_profile`, is created and Mashup Center applications are deployed to this profile. The profile is located in the following directory:

`/opt/IBM/MashupCenter/3.0/mm_profile`

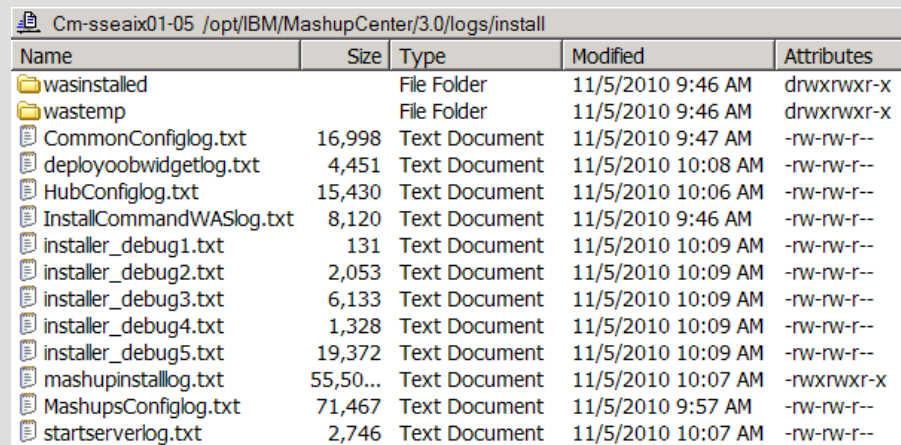
- The directories created for the Mashup Center software are shown in Figure 6-12.



Name	Size	Type	Modified	Attributes
AppServer		File Folder	11/5/2010 11:44 AM	drwxr-xr-x
Config		File Folder	11/5/2010 11:44 AM	drwxrwxr-x
FirstSteps		File Folder	11/5/2010 9:46 AM	drwxrwxr-x
Hub		File Folder	11/5/2010 10:00 AM	drwxrwxr-x
license		File Folder	11/5/2010 9:46 AM	drwxrwxr-x
logs		File Folder	11/5/2010 9:29 AM	drwxrwxr-x
mm		File Folder	11/5/2010 9:53 AM	drwxrwxr-x
mm_profile		File Folder	11/5/2010 11:44 AM	drwxr-xr-x
properties		File Folder	11/5/2010 10:07 AM	drwxrwxr-x
Uninstall		File Folder	11/5/2010 11:01 AM	drwxrwxr-x
version.txt	26	Text Do...	11/2/2010 4:42 PM	-rwxrwxr-x

Figure 6-12 Mashup Center files and directories

- Mashup Center installation log and status files are located in the directory `/opt/IBM/MashupCenter/3.0/logs/install` as shown in Figure 6-13.



Name	Size	Type	Modified	Attributes
wasinstalled		File Folder	11/5/2010 9:46 AM	drwxrwxr-x
wastemp		File Folder	11/5/2010 9:46 AM	drwxrwxr-x
CommonConfiglog.txt	16,998	Text Document	11/5/2010 9:47 AM	-rw-rw-r--
deployoobwldgetlog.txt	4,451	Text Document	11/5/2010 10:08 AM	-rw-rw-r--
HubConfiglog.txt	15,430	Text Document	11/5/2010 10:06 AM	-rw-rw-r--
InstallCommandWASlog.txt	8,120	Text Document	11/5/2010 9:46 AM	-rw-rw-r--
installer_debug1.txt	131	Text Document	11/5/2010 10:09 AM	-rw-rw-r--
installer_debug2.txt	2,053	Text Document	11/5/2010 10:09 AM	-rw-rw-r--
installer_debug3.txt	6,133	Text Document	11/5/2010 10:09 AM	-rw-rw-r--
installer_debug4.txt	1,328	Text Document	11/5/2010 10:09 AM	-rw-rw-r--
installer_debug5.txt	19,372	Text Document	11/5/2010 10:09 AM	-rw-rw-r--
mashupinstalllog.txt	55,50...	Text Document	11/5/2010 10:07 AM	-rwxrwxr-x
MashupsConfiglog.txt	71,467	Text Document	11/5/2010 9:57 AM	-rw-rw-r--
startserverlog.txt	2,746	Text Document	11/5/2010 10:07 AM	-rw-rw-r--

Figure 6-13 Mashup center log files

6.3.3 Configure Mashup Center database

These configuration steps show how to configure the Mashup Center database using IBM DB2. For other database platforms supported by Mashup Center, refer to the Lotus Mashup documentation.

Complete the following steps to configure the Mashup Center database:

1. Stop the Mashup Center application server using the following commands:

```
cd /opt/IBM/MashupCenter/3.0/mm_profile/bin
./stopServer.sh server1 -username MashupAdmin -password filenet123
```

The values you specify for the **-username** and **-password** parameters must match the administrative username and password you provided during the Mashup Center installation.

2. Remove the temp and wstemp directories from the Mashup profile directory using the following commands:

```
cd /opt/IBM/MashupCenter/3.0/mm_profile
rm -rf temp
rm -rf wstemp
```

3. Edit the database properties file located in the directory /opt/IBM/MashupCenter/3.0/Config. Example 6-3 shows the sample database_db2.properties file modified for our environment where:

- DB2 instance user name: **db2inst1**
- DB2 instance user name password: **db2inst1**
- DB2 server hostname: **cm-sseaix01-05**
- DB2 database port number: **50000**
- DB2 database name: **MASH05**

Note: The database name should not already exist on the database server.

Example 6-3 Sample database_db2.properties file

```
root@cm-sseaix01-05 /opt/IBM/MashupCenter/3.0/Config >vi
database_db2.properties
# *****
# Licensed Materials - Property of IBM
#
# 5724-U69
#
# Copyright IBM Corp. 2010 All Rights Reserved.
#
# US Government Users Restricted Rights - Use, duplication or
```

```
# disclosure restricted by GSA ADP Schedule Contract with
# IBM Corp.
#
# *****
# DB2 parameters for DB2 configuration

# User ID
db2user=db2inst1

# Password
db2userPassword=db2inst1

# DB2 Server Hostname
db2ServerName=cm-sseaix01-05

# DB2 Server Portal. For example, 50000.
db2PortNumber=50000

# DB2 Database Name. For example, MASHUPS.
db2DatabaseName=MASH05
```

4. Generate the configuration scripts for Mashup Center using the following commands:

```
cd /opt/IBM/MashupCenter/3.0/Config
./config.sh action-create-db-mashup-db2
```

Output from this command looks similar to that shown in Example 6-4.

Example 6-4 Sample Mashup Center config.sh command and output

```
root@cm-sseaix01-05 /opt/IBM/MashupCenter/3.0/Config > ./config.sh
action-create-db-mashup-db2
Buildfile: config.xml

action-create-db-mashup-db2:

mashup-admin-command-config-db2:

validate-server-stopped:

mashup-admin-command-switch-rdbms-property:

enable-import-templates:

enable-import-spaces:
```

```

enable-import-oob-flag:
  [delete] Deleting:
/opt/IBM/MashupCenter/3.0/mm/templates/oobLoadedStatus.properties

enable-import-themes:
  [wsadmin] profileName=mm_profile
registry=/opt/IBM/MashupCenter/3.0/AppServer/properties/profileRegistry.xml
  [wsadmin] profileHome=/opt/IBM/MashupCenter/3.0/mm_profile
  [wsadmin] WASX7357I: By request, this scripting client is not connected
to any server process. Certain configuration and application operations
will be available in local mode.
  [wsadmin] *sys-package-mgr*: processing new jar,
'/opt/IBM/MashupCenter/3.0/AppServer/lib/bootstrap.jar'
  [wsadmin] *sys-package-mgr*: processing new jar,
'/opt/IBM/MashupCenter/3.0/AppServer/lib/startup.jar'
...
...
...
[wsadmin] WASX7303I: The following options are passed to the scripting
environment and are available as arguments that are stored in the argv
variable: "[server1, cm-sseaix01-05Node01, MASH05, MASHUPS, MASHUPS,
MASHUPS, DB2, cm-sseaix01-05, 50000, db2inst1, db2inst1, LotusMashups,
/opt/IBM/MashupCenter/3.0/Config/lib/db2, MASHUPS]"
  [wsadmin] [-serverName "server1" -nodeName "cm-sseaix01-05Node01" -dbName
"MASH05" -schemaName "MASHUPS" -tablespaceDir "MASHUPS"
-tablespaceNamePrefix "MASHUPS" -storageGroup "MASHUPS" -RDBMS "DB2"
-dbserver "cm-sseaix01-05" -dbport "50000" -dbusername "db2inst1"
-dbpassword "db2inst1" -prodDirName "LotusMashups" -driverPath
"/opt/IBM/MashupCenter/3.0/Config/lib/db2"]

BUILD SUCCESSFUL
Total time: 1 minute 22 seconds
root@cm-sseaix01-05 /opt/IBM/MashupCenter/3.0/Config >

```

5. Run the **config.sh** script again to generate the enable-import-themes as shown in Example 6-5.

Example 6-5 Sample config.sh command to generate enable-import-themes

```

root@cm-sseaix01-05 /opt/IBM/MashupCenter/3.0/Config > ./config.sh
enable-import-themes
Buildfile: config.xml

enable-import-themes:

BUILD SUCCESSFUL
Total time: 0 seconds
root@cm-sseaix01-05 /opt/IBM/MashupCenter/3.0/Config >

```

6. The **config.sh** command writes the database creation scripts to the directory `/<MashupInstallDir>/mm_profile/dbscripts/LotusMashups/<WASserver_node_name>/<DB_type>/<DB_Name>`. For example, the database creation scripts generated for our system can be found in the following directory:

```
/opt/IBM/MashupCenter/3.0/mm_profile/dbscripts/LotusMashups/cm-sseai  
x01-05N0de01_server1/DB2v9/MASH05
```

A list of the scripts generated is shown in Example 6-6.

Example 6-6 Mashup Center database creation scripts

-rw-r--r--	1 root	system 984 Nov 05 11:45	createDatabase.sql
-rw-r--r--	1 root	system 3714 Nov 05 11:45	createGrant.sql
-rw-r--r--	1 root	system 1098 Nov 05 11:45	createSchema.sql
-rw-r--r--	1 root	system 25721 Nov 05 11:45	createTable.sql
-rw-r--r--	1 root	system 1411 Nov 05 11:45	createTablespace.sql
-rw-r--r--	1 root	system 1121 Nov 05 11:45	dropSchema.sql
-rw-r--r--	1 root	system 2399 Nov 05 11:45	dropTable.sql

7. Copy the database creation scripts to your database server. Log in to the server as a database administrator and execute the scripts in the following order:

- createDatabase.sql**
- createSchema.sql**
- createTablespace.sql**
- createTable.sql**
- createGrant.sql**

Note: It is recommended that you execute the database creation scripts from a single script. The following is a sample DB2 script used to create the MASH05 database for our test environment:

```
#!/bin/sh  
db2 drop db MASH05  
db2 -tvf createDatabase.sql  
db2 connect to MASH05  
db2 -tvf createSchema.sql  
db2 -tvf createTablespace.sql  
db2 -tvf createTable.sql  
db2 -tvf createGrant.sql
```

8. Start the WebSphere application server for Mashup Center using the following commands:

```
cd /opt/IBM/MashupCenter/3.0/mm_profile/bin
```

./startServer.sh server1

9. Verify you can login to the WebSphere console. The URL for the console is `http://<hostname>:9060/ibm/console`. The console login name and password are the administrator user name and password you specified when you installed the Mashup Center software.
10. Test the JDBC data source connection to the MashupCenter database.
 - a. From the WebSphere console, click **Resources** → **JDBC** → **Data sources**.
 - b. Select the **mashupDS** data source and click the **Test connection** button.
11. Verify you can login to the Mashup Center application. From your browser, go to the following url:
`http://<hostname>:9080/mum/enabler`
Login as the administrative user you specified during the Mashup Center install as shown in Figure 6-14 on page 148.

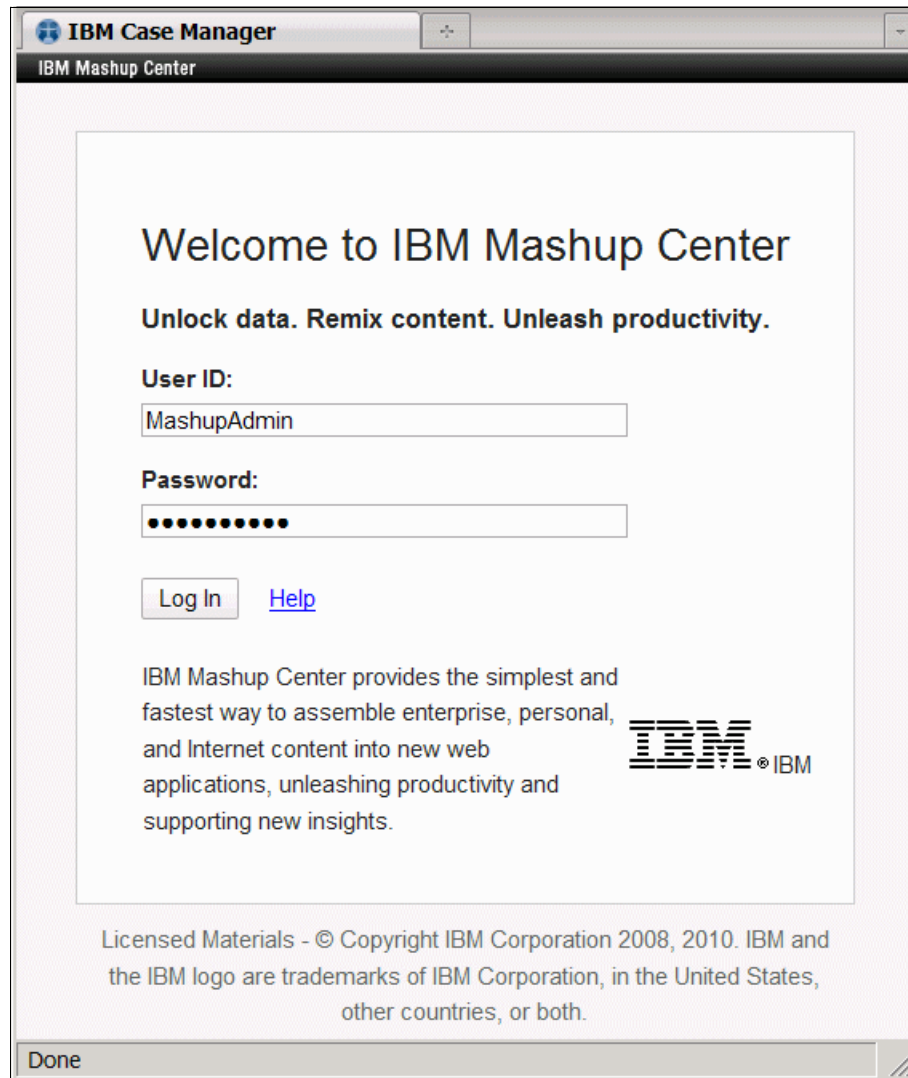


Figure 6-14 IBM Mashup Center login window

Note: The Mashup Center contains no widgets at this time. However, successful login verifies that Mashup Center is properly installed and configured. Click the **Logout** link in the upper right corner to exit Mashup Center and continue with the Case Manager installation and configuration.

6.3.4 Reset permissions on Mashup Center (optional)

On Unix/Linux® platforms, log into the server as the **root** user to run the Mashup Center installation and configuration. If you want to change ownership of Mashup Center profile, do so after the installation and configuration are complete. The steps listed below show how to change ownership of the Mashup Center profile to a non-root user.

1. Create a non-root operating system user (for example **p80Susr**) and group (for example **p80Sgrp**) on the Mashup Center server.
2. As the **root** user, stop the Mashup Center application server using the following commands:

```
cd /opt/IBM/MashupCenter/3.0/mm_profile/bin
./stopServer.sh server1 -username <AdminUser> -password
<AdminPassword>
```

where *<AdminUser>* and *<AdminPassword>* are the administrative user name and password you provided during the Mashup Center install.

3. Change ownership of the Mashup Center application server profile (mm_profile) and hub directory using the following commands:

```
cd /opt/IBM/MashupCenter/3.0/
chown -Rf p80Susr:p80Sgrp mm_profile
chown -Rf p80Susr:p80Sgrp hub
```

4. Verify the **p80Susr** and **p80Sgrp** have write permissions to the /temp/logs directory. For example:

```
cd /temp
chmod 777 logs
```

5. Login as the non-root user (for example **p80Susr**) and restart the Mashup Center application server using the following commands:

```
cd /opt/IBM/MashupCenter/3.0/mm_profile/bin
./startServer.sh server1
```

6.4 Installing Workplace XT for Case Manager

IBM Case Manager configurations require IBM Workplace XT be deployed to the same JVM as Mashup Center. The profile for Mashup Center is located at /opt/IBM/MashupCenter/3.0/mm_profile. The procedure that follows describes only the steps to install the Workplace XT software on the Case Manager server.

The steps for deploying and configuring Workplace XT will be covered later in this chapter.

Note: If you plan to install IBM Workplace XT as a non-root user, make sure the user has write permissions to the installation directory (default /opt/IBM/FileNet) and read permissions to the installation media download location.

1. Log in to the server as the Workplace XT installation user (for example `p80Susr`). If required for your environment, export the `DISPLAY` variable. Change directory to your download location and start the Workplace XT installer using the following commands:

```
cd /tmp/download/WorkplaceXT
./WorkplaceXT-1.1.4.7-AIX.bin
```
2. At the Welcome window, click **Next**.
3. Review the license agreement terms and select the **I accept both the IBM and the non-IBM terms** radio button. Click **Next** to continue.
4. Enter the directory where you want to have the Workplace XT software installed. The default location is /opt/IBM/FileNet/WebClient. Click **Next** to continue.
5. Select the J2EE application server and version used on the Content Engine server. In our case, we selected **IBM WebSphere Application Server Version 7.x**. Click **Next** to continue.
6. Enter the Content Engine API URLs and transport method. Values configured for our test Development environment are shown in Table 6-6.

Table 6-6 EJB URLs for Content Engine API

Name	Value
Transport Method	EJB
Content Engine client software URL	cemp:iiop/hq-maui:2809/FileNet/Engine
Content Engine upload URL	cemp:iiop/hq-maui:2809/FileNet/Engine
Content Engine download URL	cemp:iiop/hq-maui:2809/FileNet/Engine

Make sure you edit the CE server hostname and port number to match what is used in your environment. Click **Next** to continue.

Note: The port number used in the Content Engine API URL is the BOOTSTRAP_ADDRESS port used by the application server where the Content Engine is deployed. You can verify this port number in the WebSphere console by clicking **Servers** → **Server Types** → **WebSphere application servers** → **server_name** → **Ports**.

7. Enter your choice for creation of the WorkplaceXT .ear file for deployment. Click **Next** to continue.

Note: In our environment, we chose the option to create the .ear file for deployment. The .ear file can be found at:

/opt/IBM/FileNet/WebClient/deploy/web-client.ear

Note that this .ear file will be updated when the Content Engine and Process Engine client files are installed. Note that the time stamp and file size for the .ear file will change each time it is updated.

8. Type the directory where you want to have the Workplace XT configuration files installed. The default location is /opt/IBM/FileNet/Config. Click **Next** to continue.
9. Type the upload directory path. The default location is /opt/IBM/FileNet/WebClient/Upload. Click **Next** to continue.
10. Type the download directory path. The default location is /opt/IBM/FileNet/WebClient/Download. Click **Next** to continue.
11. Type the log files directory path. The default location is /opt/IBM/FileNet/WebClient/LogFiles. Click **Next** to continue.
12. Enter your choice for configuring user token security keys. The default is to not generate maximum strength keys, with the number of keys defaulting to 3. Click **Next** to continue.

Note: The installer will place the crypto key file at the following location:

/opt/IBM/FileNet/Authentication/UTCryptoKeyFile.properties

13. Verify the installation parameters and click **Next** to continue.
14. Verify the installation summary information and click **Install**.
15. Click **Finish** at the completion of the install. The Workplace XT installer creates folders in the installation directory (/opt/IBM/FileNet) as shown in Example 6-7 on page 152.

Example 6-7 Directories created by Workplace XT installer

drwxrwxr-x	2	p80Susr	p80Sgrp	256	Nov 08 16:41	Authentication
drwxrwxr-x	3	p80Susr	p80Sgrp	256	Nov 08 16:41	Config
drwxrwxr-x	12	p80Susr	p80Sgrp	4096	Nov 08 16:41	WebClient

6.5 Installing Case Manager

Complete the following steps to install IBM Case Manager software on your server:

1. Log in to the server as the Case Manager installation user (for example **p80Susr**). If required for your environment, export the DISPLAY variable. Change directory to your download location and start the Case Manager installer using the following commands:

cd /tmp/download/CaseManager

./5.0.0-CM-AIX.BIN
2. Select the appropriate language from the drop-down list and click **OK** to continue.
3. The Welcome window displays as shown in Figure 6-15 on page 153. Click **Next** to continue.



Figure 6-15 Case Manager installer Welcome window

4. Review the license agreement terms as shown in Figure 6-16 on page 154. Select the **I accept both the IBM and the non-IBM terms** radio button and click **Next** to continue.

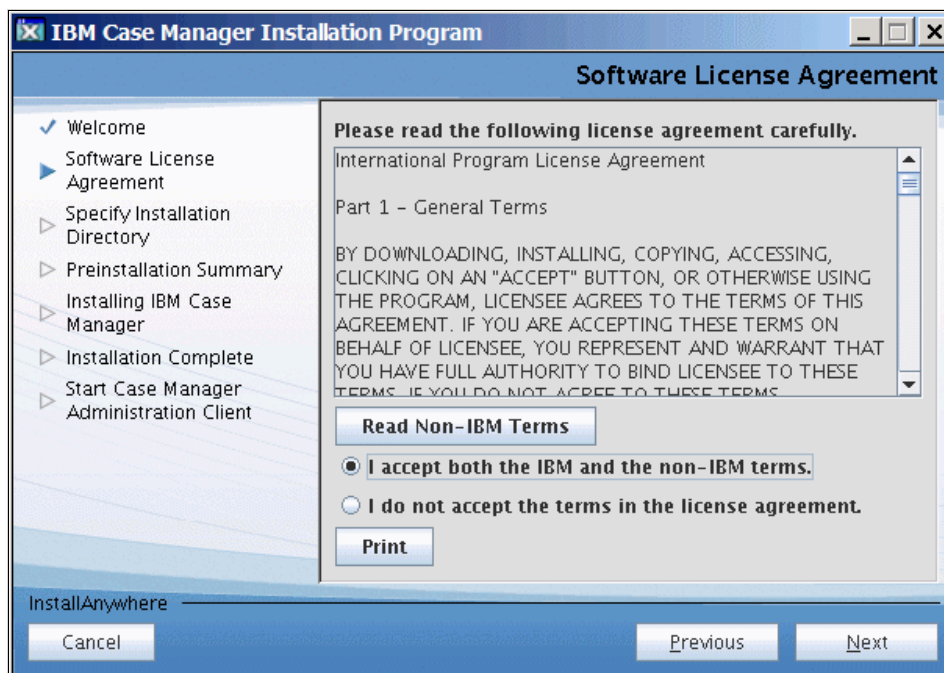


Figure 6-16 Case Manager software license agreement

5. Enter the directory where you want to have the Case Manager installed. The default location, as shown in Figure 6-17 on page 155, is /opt/IBM/CaseManagement. Click **Next** to continue.

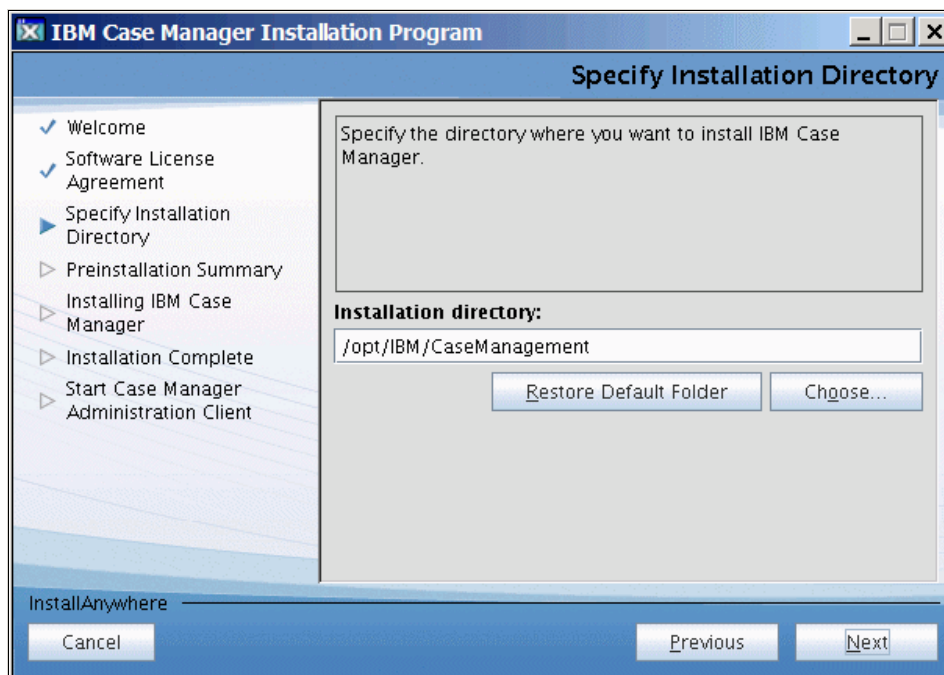


Figure 6-17 Case Manager installation directory

6. Review the summary information as shown in Figure 6-18 on page 156. Click **Install** to begin the installation.

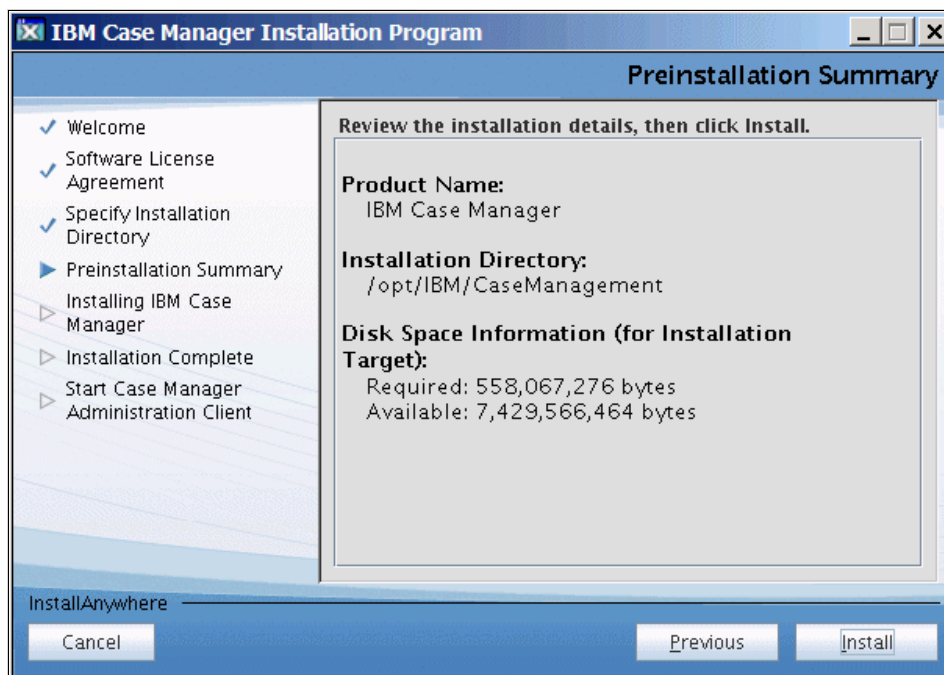


Figure 6-18 Case Manager pre-installation summary

7. At the completion of the install, a status message is displayed similar to that shown in Figure 6-19 on page 157. Click **Next** to continue.

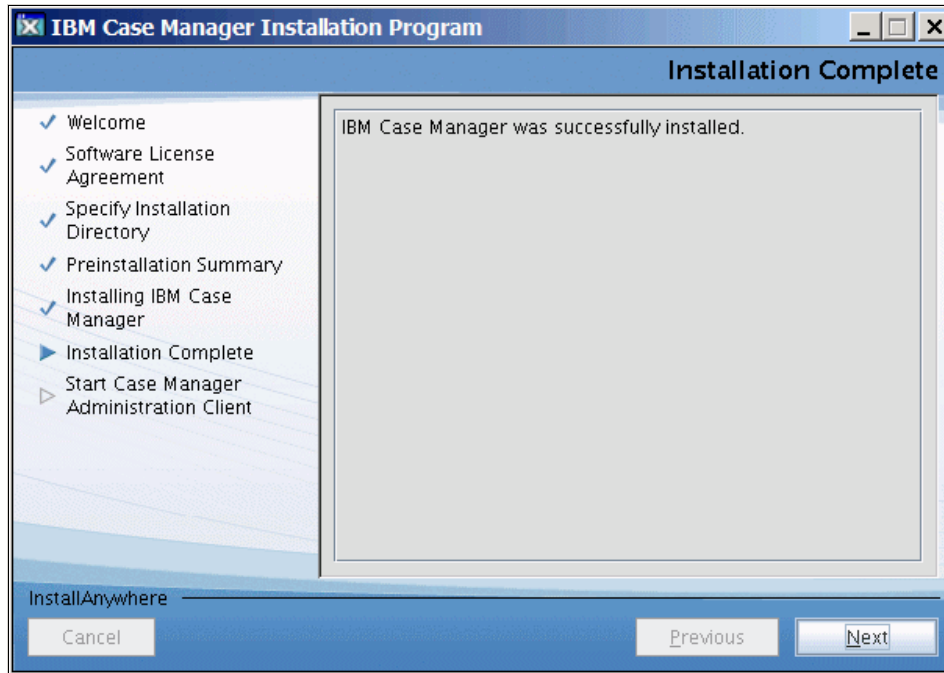


Figure 6-19 Case Manager install completion status

8. Click to clear the **Start the administration client** check box as shown in Figure 6-20 on page 158. Click **Done** to exit the installer.

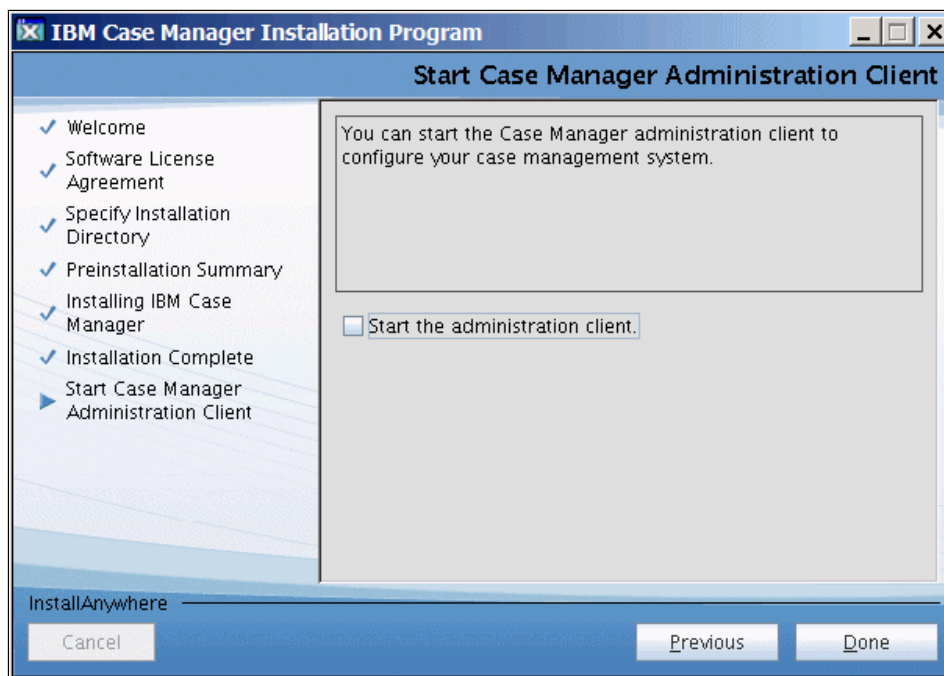


Figure 6-20 Case Manager installation completion status

9. Verify that the installer created files and folders in the installation directory (/opt/IBM/CaseManagement) are similar to those shown in Example 6-8.

Example 6-8 Case Manager directory structure

```

-rwxrwxr-x 1 p80Susr p80Sgrp 50 Nov 04 11:24 CMII0500.SYS2
drwxrwxr-x 7 p80Susr p80Sgrp 256 Nov 09 14:24 CaseWidgets
-rw-rw-r-- 1 p80Susr p80Sgrp 68800 Nov 09 14:29
IBM_Case_Manager_InstallLog.log
drwxrwxr-x 4 p80Susr p80Sgrp 256 Nov 09 14:24 _jvm
drwxrwxr-x 2 p80Susr p80Sgrp 256 Nov 09 14:29 _uninstaller
drwxrwxr-x 15 p80Susr p80Sgrp 4096 Nov 09 14:25 configure
-rwxrwxr-x 1 p80Susr p80Sgrp 762 Nov 09 14:25 displayVersion.sh
drwxrwxr-x 3 p80Susr p80Sgrp 256 Jul 27 13:59 java
drwxrwxr-x 2 p80Susr p80Sgrp 256 Nov 09 14:25 lib
drwxrwxr-x 2 p80Susr p80Sgrp 4096 Nov 09 14:24 license
drwxrwxr-x 3 p80Susr p80Sgrp 256 Nov 09 14:25 properties
-rwxrwxr-x 1 p80Susr p80Sgrp 519 Nov 04 11:49 version.txt
-rwxrwxr-x 1 p80Susr p80Sgrp 36 Nov 04 11:24 widgets.uid

```

10. Review the Case Manager install log file located at:

```
/opt/IBM/CaseManagement/IBM_Case_Manager_InstallLog.log
```

There are additional log files located in the /tmp directory useful for debugging installation errors. These files are located at:

```
/tmp/cm500_install_stderr.txt
```

```
/tmp/cm500_install_stdout.txt
```

6.6 Installing FileNet P8 client files

Both IBM Workplace XT application and IBM Case Manager require client files to communicate with the P8 Content Engine and P8 Process Engine. The client files you install on your Case Manager server must match the exact version and fixpack level installed on the core engines in your P8 environment. For example, if you are running P8 Content Engine version 5.0 with fixpack 1, you must install the Content Engine Client files for CE 5.0 fixpack 1 on your Case Manager server. Likewise, if you are running P8 Process Engine version 5.0 base, you must install the Process Engine Client files for PE 5.0 base on your Case Manager server.

6.6.1 Install Content Engine Client Files

Install the CE Client files on your Case Manager server using the following steps:

1. Log in to the server as the user that installed Workplace XT and Case Manager (for example **p80Susr**). If required for your environment, export the DISPLAY variable. Change directory to your download location and start the Content Engine Client installer using the following commands:

```
cd /tmp/download/CEClient
```

```
./5.0.0-P8CE-CLIENT-AIX.BIN
```

2. On the Welcome window, click **Next** to continue.
3. Review the license agreement terms and select **I accept both the IBM and the non-IBM terms** radio button. Click **Next** to continue.
4. Enter the directory where you want to have the CE Client installed. The default location, as shown in Figure 6-21 on page 160, is /opt/IBM/FileNet/CEClient. Click **Next** to continue.

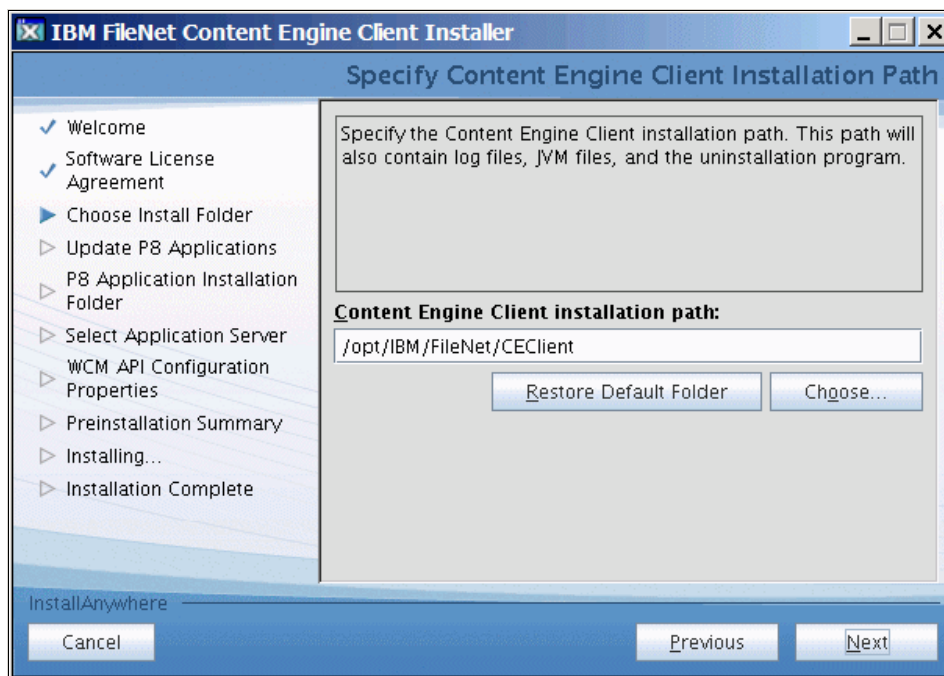


Figure 6-21 Content Engine client installation path

5. Type the hostname, port, and protocol for connecting to the Content Engine. Click **Next** to continue.

Note: The values you enter for hostname, port and protocol should be the same as those specified in the URL for the FileNet ping page on your Content Engine server. For example, in our environment, the url for the FileNet ping page is `http://hq-maui:9080/FileNet/Engine`. Therefore, we used the `hq-maui` for the hostname, `9080` for the port, and `http` for the protocol as shown in Figure 6-22 on page 161.

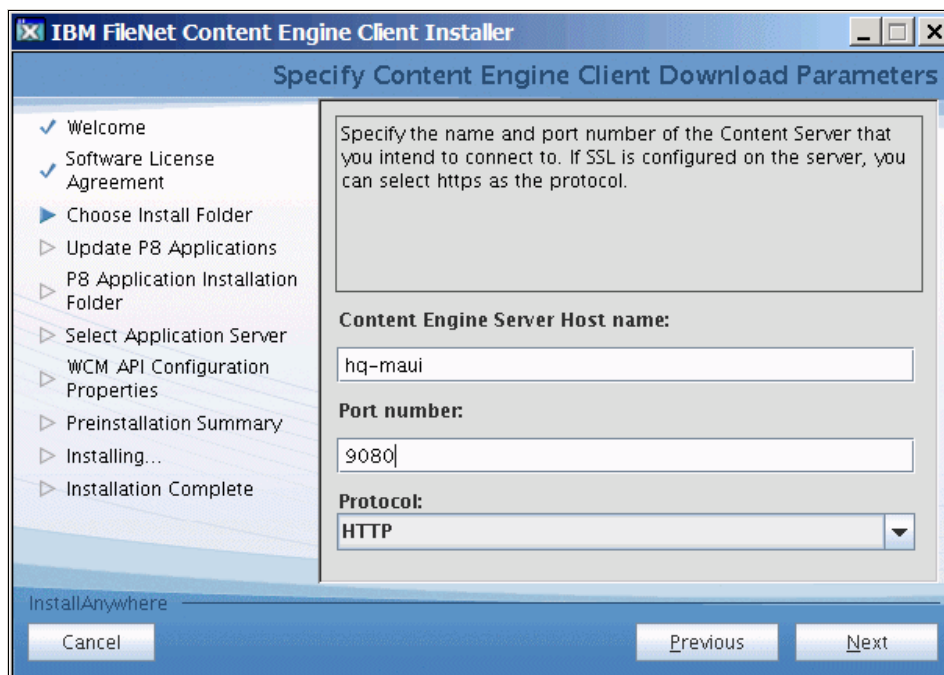


Figure 6-22 Content Engine client download parameters

6. From the list of FileNet P8 Applications, select **Workplace XT** and **IBM Case Manager** as shown in Figure 6-23 on page 162. You will need to scroll down to find the IBM Case Manager selection. Click **Next** to continue.

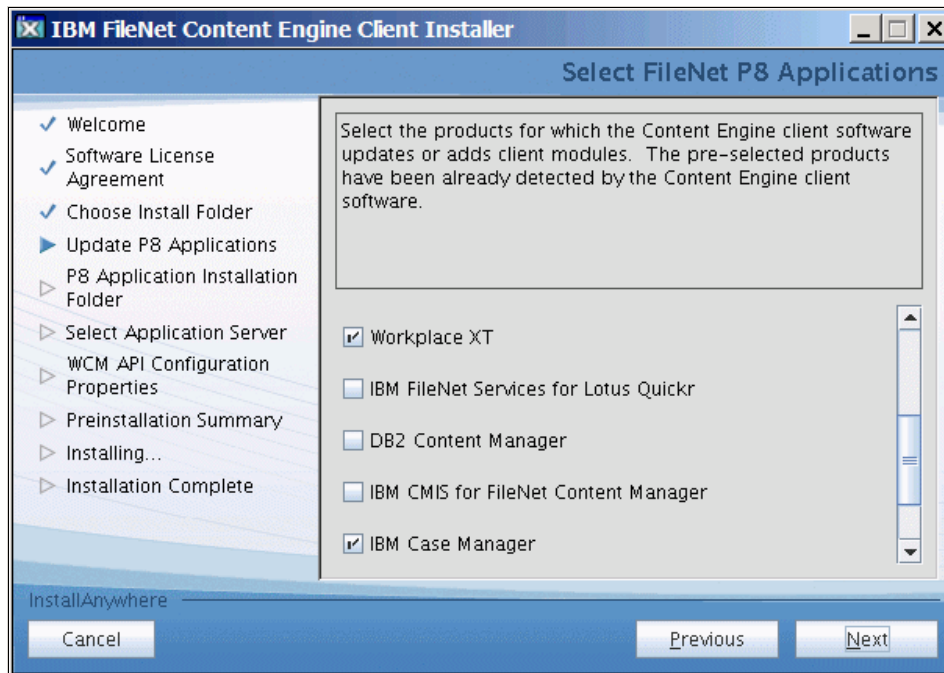


Figure 6-23 Content Engine client installer P8 applications list

7. The client installer will detect and display the location of the IBM Case Manager installation. The default location is `/opt/IBM/CaseManagement`. Click **Next** to continue.
8. The client installer will detect and display the location of the Workplace XT installation. The default location is `/opt/IBM/FileNet/WebClient`. Click **Next** to continue.
9. Select the type of application server used by the Content Engine as shown in Figure 6-24 on page 163. Click **Next** to continue.

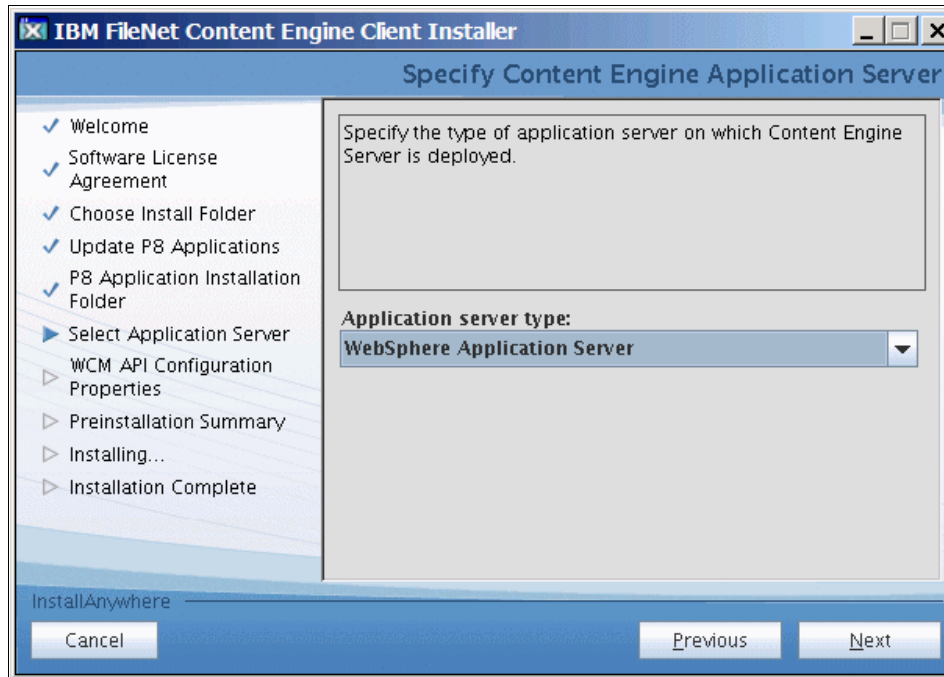


Figure 6-24 Content Engine application server type

10. Enter the Content Engine API URLs and transport method. Values configured for our test development environment are shown in Table 6-7.

Table 6-7 Content Engine URLs for EJB Transport

Name	Value
Content Engine client software URL	cemp:iiop/hq-maui:2809/FileNet/Engine
Content Engine upload URL	cemp:iiop/hq-maui:2809/FileNet/Engine
Content Engine download URL	cemp:iiop/hq-maui:2809/FileNet/Engine

Make sure you edit the CE server hostname and port number to match what is used in your environment. Click **Next** to continue.

Note: The port number used in the Content Engine API URL is the BOOTSTRAP_ADDRESS port used by the application server where the Content Engine is deployed. You can verify this port number in the WebSphere console by clicking **Servers** → **Server Types** → **WebSphere application servers** → **server_name** → **Ports**.

11. Select the **Have the installer create the deployment file** radio button as shown in Figure 6-25. Click **Next** to continue.

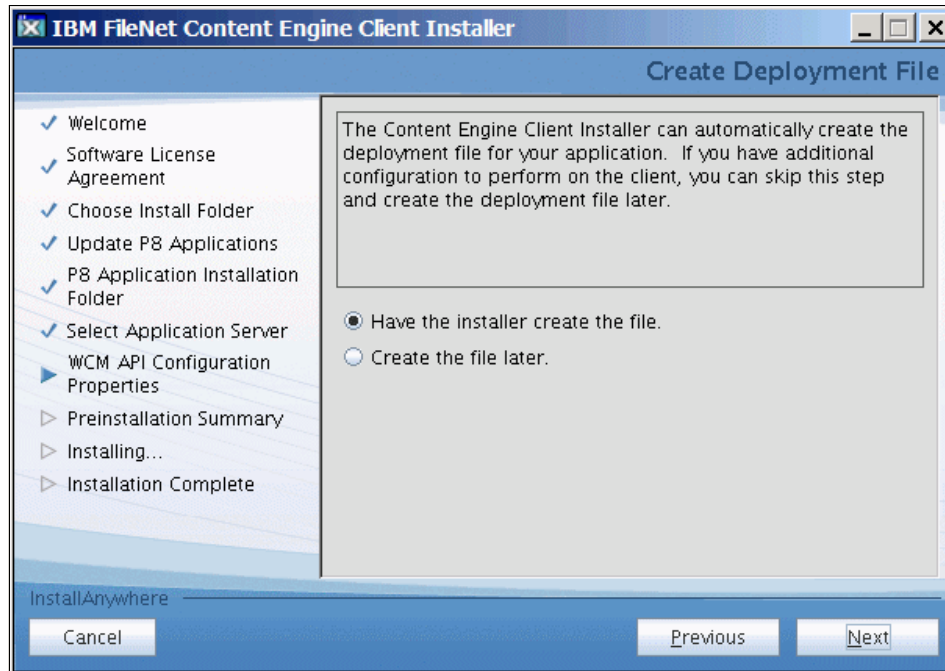


Figure 6-25 Create deployment file options

12. Review the pre-installation summary information and click **Install** to start the CE client installation.
13. When the installation is complete, click **Done** to exit the installer. Review the CE Client install log file located at:
- `/opt/IBM/FileNet/CEClient/ceclient_install_log_5.0.txt`

Note: The CE client installer creates files in the following directory:

```
/opt/IBM/FileNet/CEClient
```

In addition, a number of files are added and updated in the install directories for the installed P8 components, which in our example are Workplace XT and Case Manager. If you selected the option to update the .war and .ear files, the updated files can be found at the following locations:

```
/opt/IBM/FileNet/WebClient/web_client.ear  
/opt/IBM/FileNet/WebClient/web_client.war  
/opt/IBM/CaseManagement/configure/deploy/CaseBuilder.ear  
/opt/IBM/CaseManagement/configure/deploy/CaseManager.war
```

6.6.2 Install Process Engine Client Files

Install the PE Client files on your Case Manager server using the following guidelines:

1. Log in to the server as the user that installed Workplace XT and Case Manager (for example **p80Susr**). If required for your environment, export the DISPLAY variable. Change directory to your download location and start the Process Engine Client installer using the following commands:

```
cd /tmp/download/PEClient  
./5.0.0-P8PE-CLIENT-AIX.BIN
```

2. On the Welcome window, click **Next** to continue.
3. Review the license agreement terms and select the **I accept both the IBM and the non-IBM terms** radio button. Click **Next** to continue.
4. Enter the directory where you want to have the PE Client installed. The default location, as shown in Figure 6-26 on page 166, is /opt/IBM/FileNet/BPMClient. Click **Next** to continue.

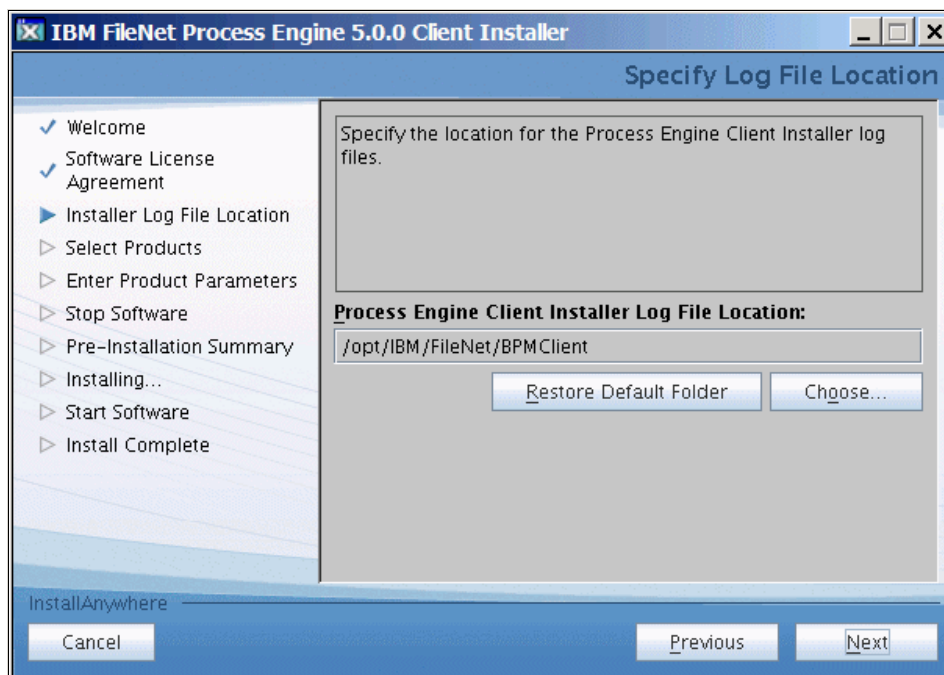


Figure 6-26 Process Engine client installation path

5. From the list of FileNet P8 Applications, select **Workplace XT** and **Case Manager** as shown in Figure 6-27 on page 167. Click **Next** to continue.

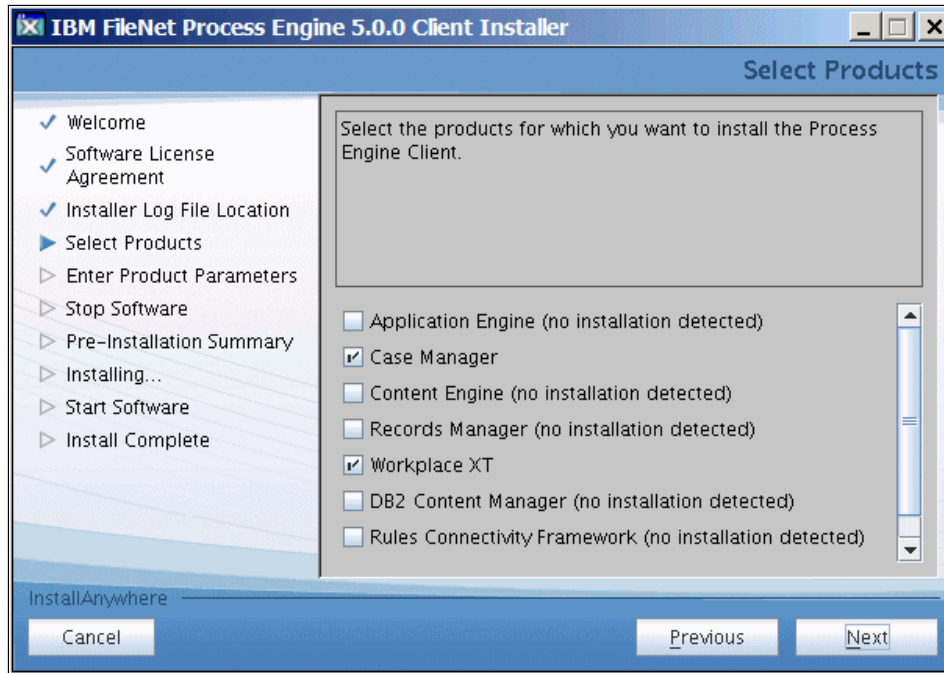


Figure 6-27 Process Engine client installer P8 applications list

6. The client installer will detect and display the location of the IBM Case Manager installation. The default location is `/opt/IBM/CaseManagement`. Click **Next** to continue.
7. The client installer will detect and display the location of the Workplace XT installation. The default location is `/opt/IBM/FileNet/WebClient`. Click **Next** to continue.
8. Enter the Component Manager Content Engine URL. The value configured for our test development environment is shown in Table 6-8.

Table 6-8 Component Manager Content Engine URL

Name	Value
Component Manager Content Engine URL	<code>http://hq-maui:9080/wsi/FNCEWS40MTOM/</code>

Make sure you edit the CE server hostname and port number to match what is used in your environment. Click **Next** to continue.

Note: The port number used in the Component Manager Content Engine URL is the WC_defaulthost port used by the application server where the Content Engine is deployed. You can verify this port number in the WebSphere console by clicking **Servers** → **Server Types** → **WebSphere application servers** → **server_name** → **Ports**.

9. Type the base documentation URL as shown in Figure 6-28 and click **Next**.

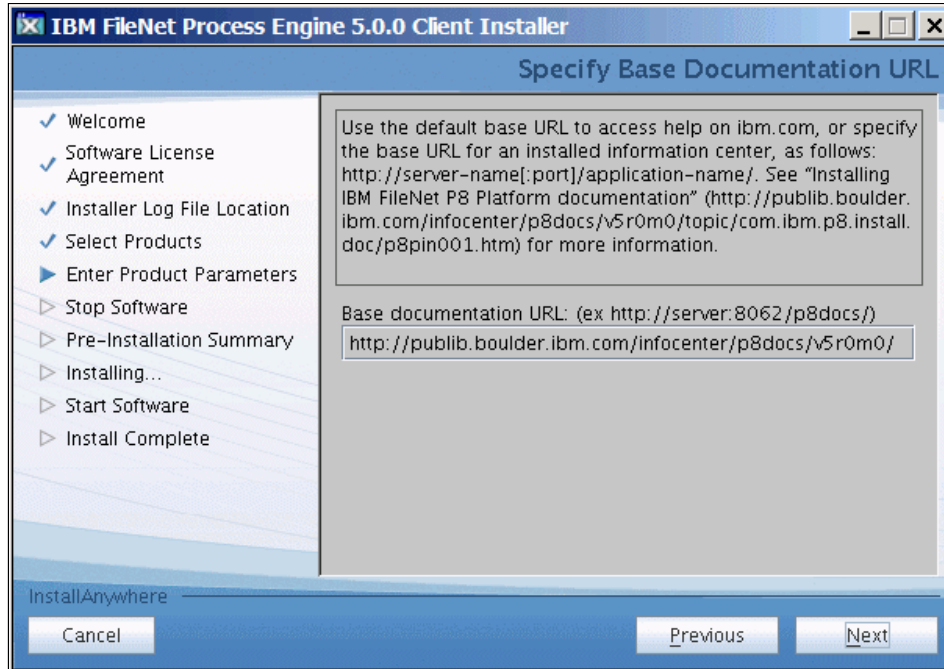


Figure 6-28 Base documentation URL

10. Type the name of the browser to use for displaying help information and click **Next**.
11. Select the check box to **Add the REST service** as shown in Figure 6-29 on page 169. Click **Next** to continue.

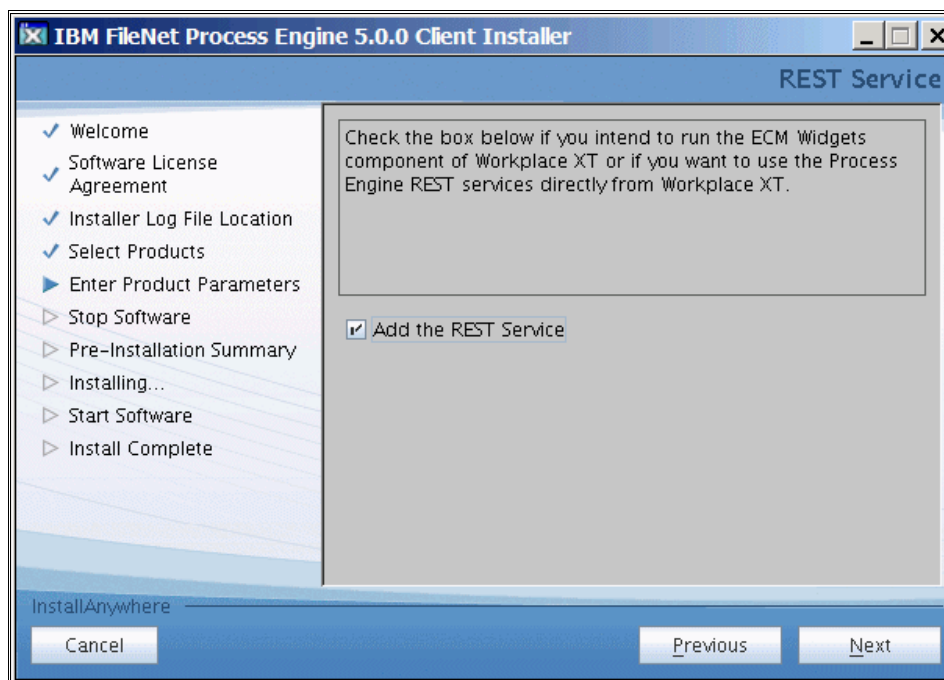


Figure 6-29 REST Service for ECM Widgets

12. Select the option to have the installer create the deployment files as shown in Figure 6-30 on page 170. Click **Next** to continue.

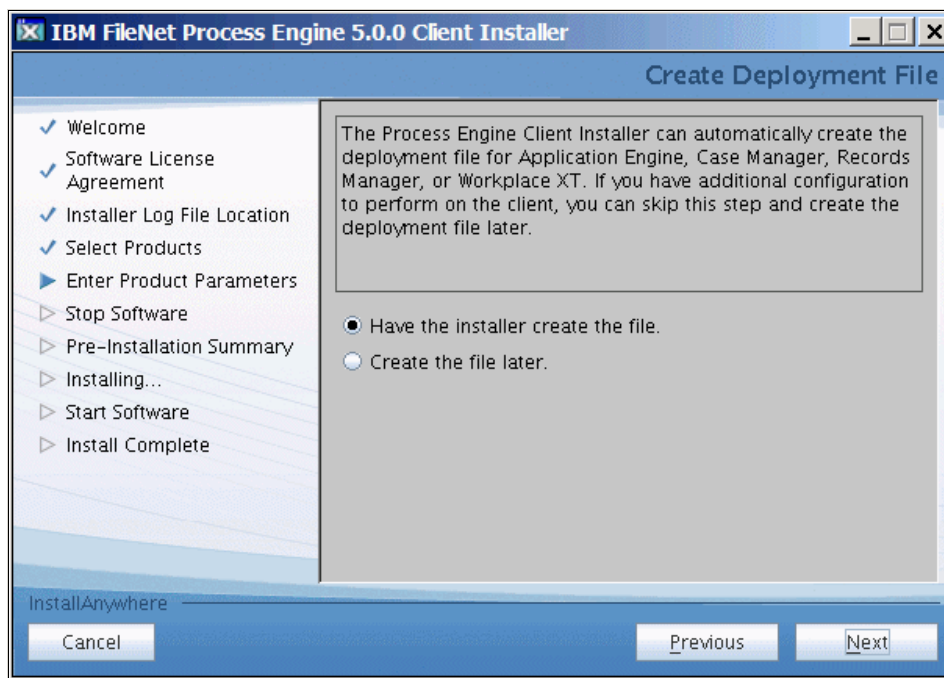


Figure 6-30 Create deployment file options

13. Review the pre-installation summary information and click **Install** to start the PE client installation.
14. Click to clear the **IBM FileNet Workplace XT BPM Components** check box as shown in Figure 6-31 on page 171. Click **Next** to continue.

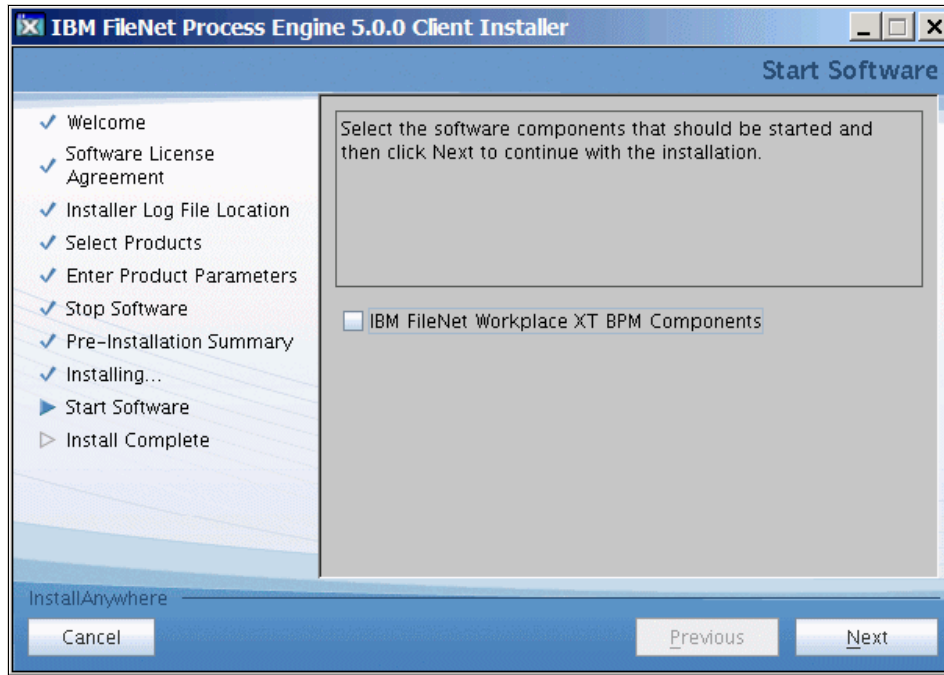


Figure 6-31 Start software options

15. When the installation is complete, click **Done** to exit the installer. Review the PE Client install log file located at:

```
/opt/IBM/FileNet/BPMClient/IBM_FileNet_Process_Engine_5.0.0_Client_Installer_InstallLog.log
```

Note: The PE client installer creates files in the following directory:

```
/opt/IBM/FileNet/BPMClient
```

In addition, a number of files are added and updated in the install directories for the installed P8 components, which in our case are Workplace XT and Case Manager. If you selected the option to update the .war and .ear files, the updated files can be found at the following locations:

```
/opt/IBM/FileNet/WebClient/web_client.ear
/opt/IBM/FileNet/WebClient/web_client.war
/opt/IBM/CaseManagement/configure/deploy/CaseBuilder.ear
/opt/IBM/CaseManagement/configure/deploy/CaseManager.war
```




Configuring Case Manager development system

This chapter describes the steps for configuring development system for IBM Case Manager.

This chapter covers the following topics:

- ▶ Configuration profiles
- ▶ Launch Case Manager Administration Client
- ▶ Configure IBM Case Manager Builder
- ▶ Configure Workplace XT for the Case Manager environment
- ▶ Configure Case Manager Client
- ▶ Configure LTPA timeout for Case Manager Builder
- ▶ Configure Case Manager development environment security

Attention: This chapter describes only a portion of the steps required to set up a complete Case Manager environment. We strongly suggest reading (and following the exercises provided within) the following chapters in the given order to complete and understand the overall set up process:

1. Chapter 6, “Set up overview and installation” on page 123
2. Chapter 7, “Configuring Case Manager development system” on page 173
3. Chapter 8, “Validating Case Manager development system” on page 223
4. Chapter 9, “Configuring Case Manager production system” on page 261

7.1 Configuration profiles

IBM Case Manager includes an administration client tool for configuring and deploying your Case Manager environment. The IBM Case Manager Administration Client (CMAC) allows you to create configuration profiles consisting of task definitions and configuration data. There are three basic types of profiles:

- ▶ Case Manager Builder configuration profile: used to configure and deploy the Case Manager Builder application for development environments.
- ▶ Case Manager Client configuration profile: used to configure and deploy the Case Manager Client application for both development and production environments.
- ▶ Case deployment profile: used to deploy a specific case management solution for a production environment. In development environments, the Case Manager Builder application is used to deploy solutions.

Profile definitions are stored in the following location:

```
<CM_install_path>/configure/profiles/<my_profile>/<my_profile>.cfgp
```

The configuration data for each task defined in a profile is stored in XML files located in the profile folder. Example 7-1 shows the directory structure and files created for a Case Manager Builder configuration profile named CM_Builder.

Example 7-1 Directory structure and files for profile CM_Builder

```
p80Susr@cm-sseaix01-05 / >cd
/opt/IBM/CaseManagement/configure/profiles/CM_Builder
p80Susr@cm-sseaix01-05 /opt/IBM/CaseManagement/configure/profiles/CM_Builder
>ls -al
total 80
drwxr-xr-x 3 p80Susr p80Sgrp 4096 Nov 16 08:53 .
drwxrwxr-x 5 p80Susr p80Sgrp 256 Nov 17 13:52 ..
-rw-r--r-- 1 p80Susr p80Sgrp 898 Nov 15 15:49 CM_Builder.cfgp
-rw-r--r-- 1 p80Susr p80Sgrp 3898 Nov 15 15:49 casemanagerbuilderconfig.xml
-rw-r--r-- 1 p80Susr p80Sgrp 843 Nov 15 15:49 configcaseloginmodules.xml
-rw-r--r-- 1 p80Susr p80Sgrp 3038 Nov 15 16:26 configdevenviron.xml
-rw-r--r-- 1 p80Susr p80Sgrp 5705 Nov 16 08:36 configureldap.xml
-rw-r--r-- 1 p80Susr p80Sgrp 3570 Nov 16 08:48 deploycaseapi.xml
-rw-r--r-- 1 p80Susr p80Sgrp 2825 Nov 16 08:53 deploycmbapp.xml
-rw-r--r-- 1 p80Susr p80Sgrp 1362 Nov 16 08:43 importltpakey.xml
drwxr-xr-x 2 p80Susr p80Sgrp 256 Nov 16 15:15 status
p80Susr@cm-sseaix01-05 /opt/IBM/CaseManagement/configure/profiles/CM_Builder >
```

7.2 Launch Case Manager Administration Client

To launch the Case Manager Administration Client application, perform the following steps:

1. Log in to the server as the user that installed Case Manager (for example **p805usr**). If required for your environment, export the **DISPLAY** variable. Run the following commands to start the Case Manager Administration Client (CMAC):

```
cd /opt/IBM/CaseManagement/configure
```

```
./configmgr
```

2. On initial startup of administration client, the Welcome page displays as shown in Figure 7-1. To close the Welcome page, click the **X** on the Welcome tab.



Figure 7-1 Case Manager Administration Client welcome window

3. By default, the administration client will not save any passwords to the configuration files. To enable the tool to save passwords, click **Window** → **Preferences** from the toolbar. Select the **Save all passwords to file when saving a task or profile** check box and click **Apply**.

Note: Passwords saved to file by the Case Manager Administration Client (CMAC) tool are always encrypted.

7.3 Configure IBM Case Manager Builder

For development environments, you must configure and deploy the Case Manager Builder application. To create a Case Manager Builder configuration profile, perform the following steps:

1. From Case Manager Administration Client, click **File** → **Create Profile** from the menu bar as shown in Figure 7-2 on page 177.

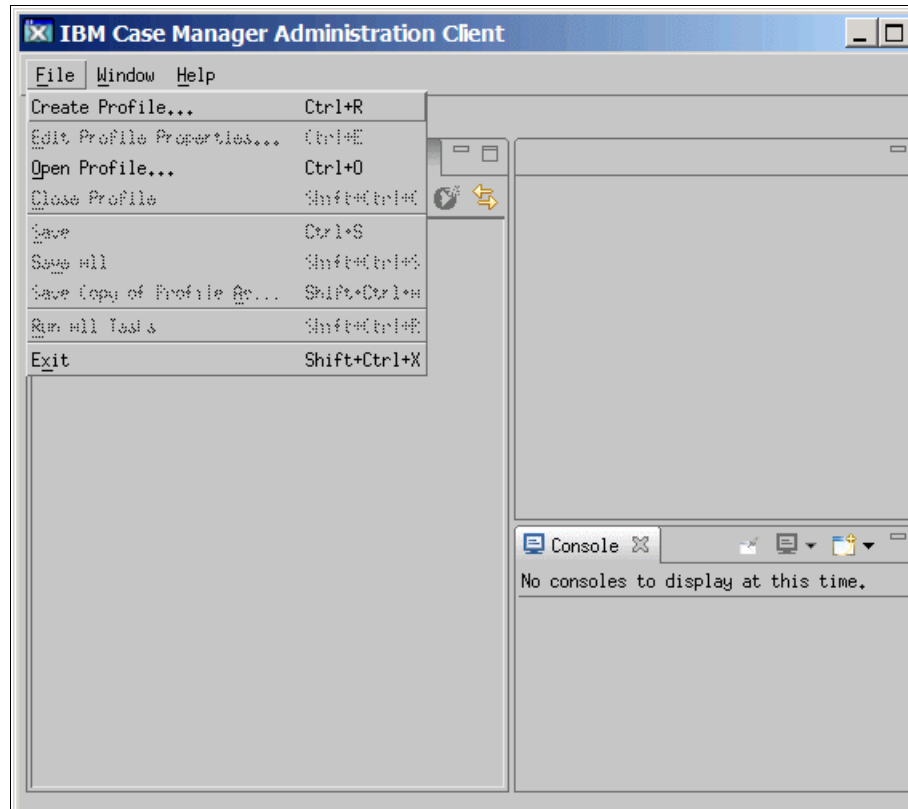
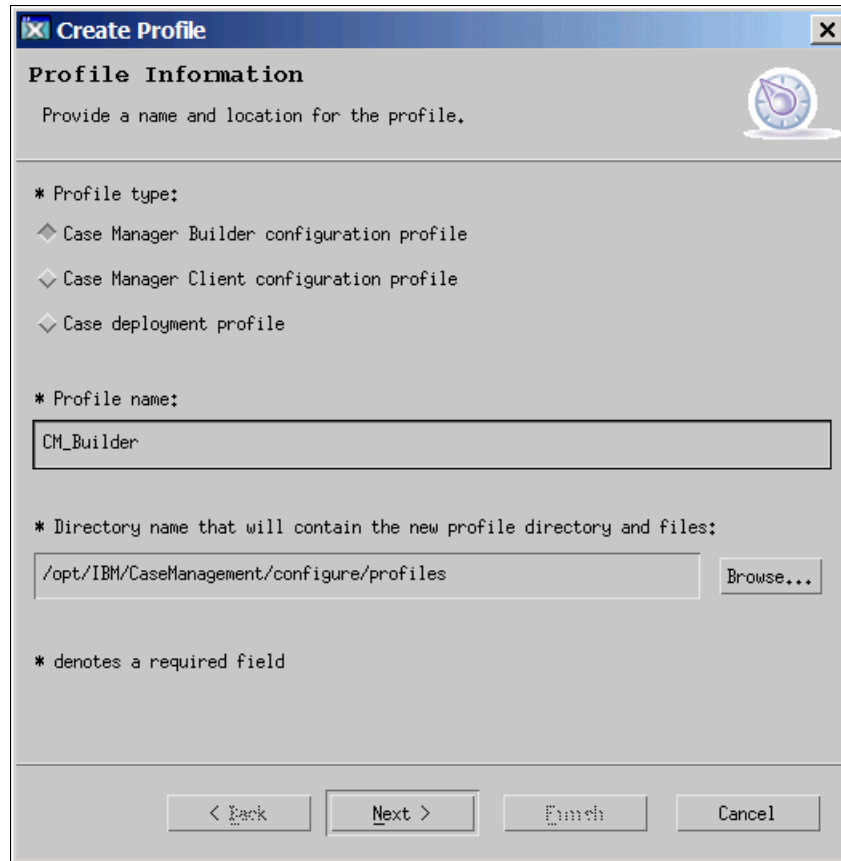


Figure 7-2 Create Case Manager administration client profile

2. For Profile type, select **Case Manager Builder configuration profile**. Type a name for the profile and select the location where you want to have the new profile directory created. See example profile information in Figure 7-3 on page 178. Click **Next** to continue.

A screenshot of a 'Create Profile' dialog box. The title bar says 'Create Profile' with a close button. The main area is titled 'Profile Information' and contains the instruction 'Provide a name and location for the profile.' Below this, there are three sections: 'Profile type:' with three radio button options ('Case Manager Builder configuration profile', 'Case Manager Client configuration profile', and 'Case deployment profile'); 'Profile name:' with a text box containing 'CM_Builder'; and 'Directory name that will contain the new profile directory and files:' with a text box containing '/opt/IBM/CaseManagement/configure/profiles' and a 'Browse...' button. A note at the bottom states '* denotes a required field'. At the very bottom are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Create Profile

Profile Information

Provide a name and location for the profile.

* Profile type:

- ◆ Case Manager Builder configuration profile
- ◆ Case Manager Client configuration profile
- ◆ Case deployment profile

* Profile name:

CM_Builder

* Directory name that will contain the new profile directory and files:

/opt/IBM/CaseManagement/configure/profiles Browse...

* denotes a required field

< Back Next > Finish Cancel

Figure 7-3 Sample profile information

3. The Case Manager Builder profile requires information about the Mashup Center application server profile (mm_profile) to configure and deploy the builder application. The values configured for our test development environment are shown in Figure 7-4 on page 180. The following are guidelines to consider when configuring this profile for your environment:
 - The Application server administrator user name is the same as the administrative user name you provided when you installed IBM Mashup Center.
 - The Application server SOAP port can be verified by logging in to the WebSphere Administrative Console for the IBM Mashup Center server.

Note: The port number used for the Application server SOAP port is the SOAP_CONNECTOR_ADDRESS port used by the application server where the Mashup Center is deployed. You can verify this port number in the WebSphere console on the Mashup Center server by clicking **Servers → Server Types → WebSphere application servers → server_name → Ports**.

- If the parameters for the Application server host and SOAP port are correct, you should be able to select the **Application server cell** from the drop-down list. It might take a few seconds for the tool to connect to the server to retrieve the cell name list.
- For the Network shared directory field, type the full path to the directory that will contain the properties files. For a cluster deployment, the path must be a shared directory that is mounted on all members of the application server cluster where Case Manager Builder is to be deployed.
- Click the **Test Connection** button to verify the connection between the administration client and the application server. Testing the connection is optional. If the test fails, ensure that the application server is running and that the values that you entered for the application server properties are correct.

After you have entered all the required parameters, click **Next** to continue.

The screenshot shows a Windows-style dialog box titled "Create Profile" with a close button (X) in the top right corner. Below the title bar, the text "Set properties for Case Manager Builder configuration profile" is displayed, followed by the instruction "Provide values for the required profile properties." and a small icon of a clock. The main area contains several labeled input fields and buttons:

- * Application server installation directory: /opt/IBM/MashupCenter/3.0/AppServer (with a "Browse..." button)
- * Application server profile directory: /opt/IBM/MashupCenter/3.0/mm_profile (with a "Browse..." button)
- * Application server administrator user name: MashupAdmin
- * Application server administrator password: ***** (with a "Confirm:" field also containing *****)
- * Application server host: cm-sseaix01-05.usca.ibm.com
- * Application server SOAP port: 8880
- * Application server cell: cm-sseaix01-05Node01Cell (with a dropdown arrow icon)
- * Network shared directory: /opt/IBM/CaseManagement/configure/properties (with a "Browse..." button)

Below these fields is a "Test Connection" button. At the bottom of the dialog are four buttons: "< Back", "Next >", "Finish", and "Cancel".

Figure 7-4 Sample Case Manager Builder configuration profile properties

4. Select the tasks to include in your profile. In our example, we selected all the tasks in the list as shown in Figure 7-5 on page 181. Click **Finish** to complete the profile.

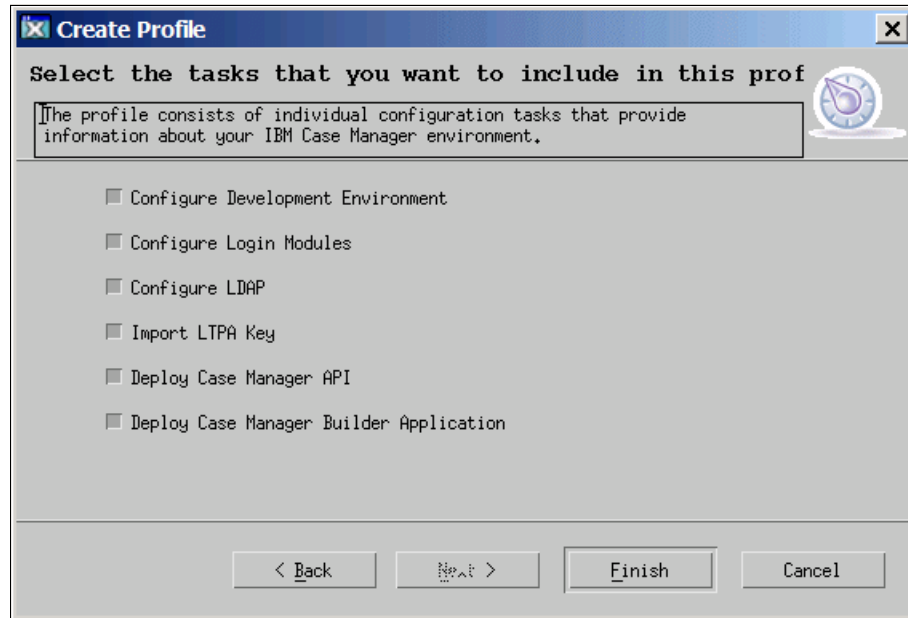


Figure 7-5 Tasks list for Case Manager Builder configuration profile

5. The new profile with the list of configuration tasks is displayed in the left pane of the administration client as shown in Figure 7-6 on page 182.

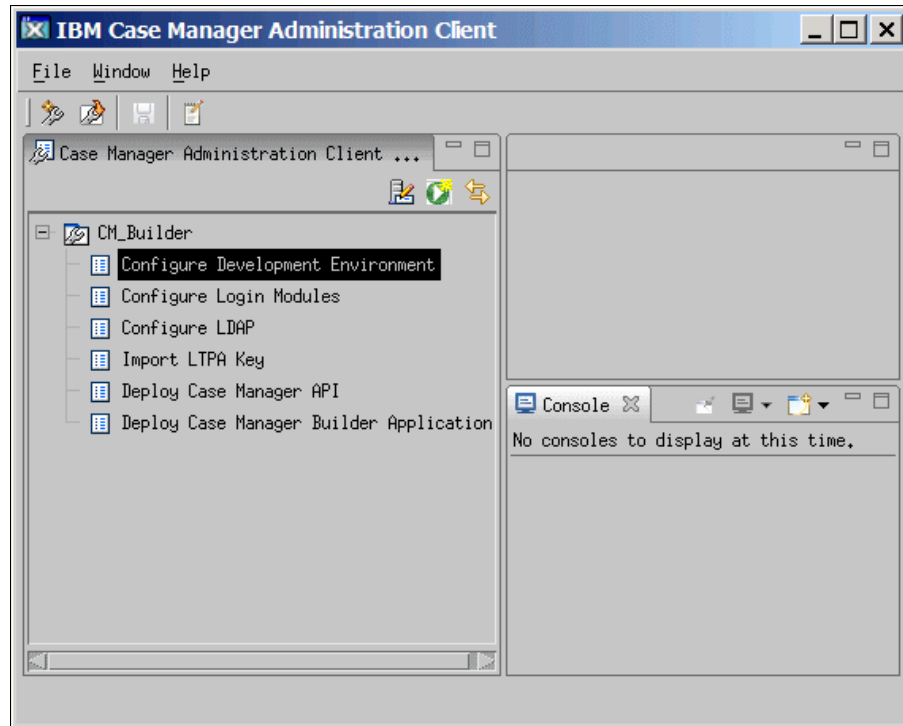


Figure 7-6 New profile and configuration tasks

7.3.1 Configure Development Environment task

The Configure Development Environment task is used to create the development environment connection definition. This connection definition is used by the Case Manager Builder to deploy case management solutions to the development environment for testing. In addition, this task performs the following actions in the development environment:

- ▶ Installs Case Manager AddOns onto the Case Manager design and target object stores if required
- ▶ Creates required events and subscriptions in Content Engine
- ▶ Configures the Case Manager servlets
- ▶ Creates the Case Manager API WAR file

To configure the development environment, perform the following steps:

1. Open the Configure Development Environment task for editing. To edit a profile task, right-click the task in the left pane, and select **Edit Selected Task**. You can also double-click a task to open it for editing.
2. Enter the values appropriate for configuring your development environment. For our test development environment, the configuration parameters are shown in Figure 7-7.

Configure Development Environment

Enter the information for configuring the development environment and creating the development environment connection definition. The connection definition is used by Case Manager Builder to deploy case management solutions to the development environment for testing. This task also installs the Case Manager AddOns, creates the required events and subscriptions in Content Engine, configures the Case Manager servlets, and creates the Case Manager API WAR file.

Test Content Engine URL

Content Engine server EJB URL: iiop://hq-maui:2809/FileNet/Engine

Content Engine server WSI URL: http://hq-maui:9080/wsi/FNCEWS40MTOM/

Content Engine domain user name: P8Admin

Content Engine domain user password: ***** Confirm: *****

Case management design object store name: CMDOS

Process Engine connection point: CM_Region1_CP (CMTOS)

IBM Mashup Center server URL: http://cm-sseaix01-05:9080/mum/enabler

Figure 7-7 Configure Development Environment task

The following are guidelines to consider when configuring your development environment:

- If Content Engine is deployed to a stand-alone server, use the following format for the Content Engine EJB URL:
iiop://ceserver:port/FileNet/Engine

If Content Engine is deployed to a cluster, use the following URL format:
`corbaloc::node1:port,:node2:port/cell/clusters/wascluster/FileNet/Engine`

Note: The port number used in the Content Engine EJB URL is the `BOOTSTRAP_ADDRESS` port used by the application server where the Content Engine is deployed. You can verify this port number in the WebSphere console by clicking **Servers** → **Server Types** → **WebSphere application servers** → *server_name* → **Ports**.

- Use the following format for the Content Engine WSI URL:

`http://ceserver:port/wsi/FNCE40MTOM/`

Note: The port number used for the Content Engine WSI URL is the `WC_defaulthost` port used by the application server where the Content Engine is deployed. You can verify this port number in the WebSphere console by clicking **Servers** → **Server Types** → **WebSphere application servers** → *server_name* → **Ports**.

- A list of values for the Case Manager design object store name and Process Engine connection point fields are retrieved from the Content Engine server. It might take a few seconds for the tool to connect to the server to retrieve the object store list. If the drop-down list for these fields is not populated, check your Content Engine URL entries and username/password values.
 - Use the following format for the IBM Mashup Center Server URL:
`http://MashupServer:port/mum/enabler`
Enter this URL in your browser and verify that it launches the default Mashup Center page.
3. After you have entered your configuration parameters for the Configure Development Environment task, save the settings to your profile. To save a task, select the task name in the left pane, then click **File** → **Save** from the menu bar. You can also save a task by selecting the task then clicking the **Save** icon on the toolbar.
 4. Run the Configure Development Environment task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.
Monitor the progress of the task in the console located in the lower right pane of the administration client display.
 5. At completion of the task, verify the IBM Case Manager folders were created in the Case Manager design and target object stores. Using the FileNet

Enterprise Manager SnapIn, expand the **Root Folder** and locate the **IBM Case Manager** folder.

6. From the Case Manager administration client, close the task by clicking the **X** in the Configure Development Environment tab.

7.3.2 Configure Login Modules task

The Configure Login Modules task is used to configure Java Authentication and Authorization Services (JAAS) logins for the WebSphere cell where Case Manager and Workplace XT applications are deployed.

To configure login modules for the development environment, perform the following steps:

1. Open the Configure Login Modules task for editing.
2. Accept the default values for the Configure Login Modules task and save the settings to your profile. The default values for the Script and Temporary directory fields are shown in Figure 7-8.

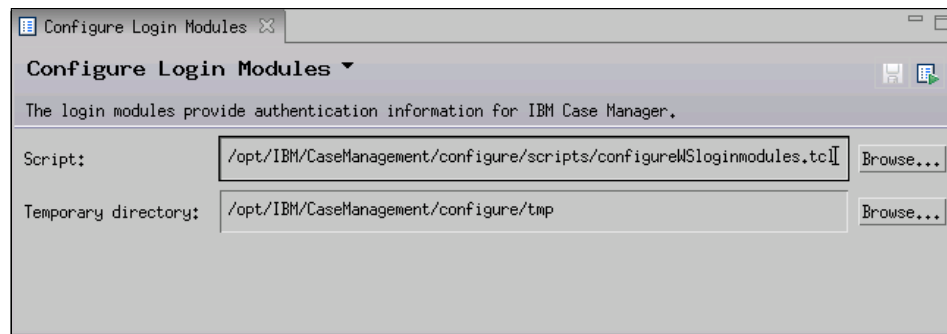


Figure 7-8 Configure Login Modules task

3. Run the Configure Login Modules task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu. Monitor the progress of the running task in the console located in the lower right pane of the administration client display.
4. At completion of the task, verify the login module was created. From the WebSphere console on the Case Manager server, click **Security** → **Global Security**. Under the Authentication section, expand the **Java Authentication and Authorization Service** node, and select **Application logins**. Verify the FileNetP8 login is listed as shown in Figure 7-9 on page 186.

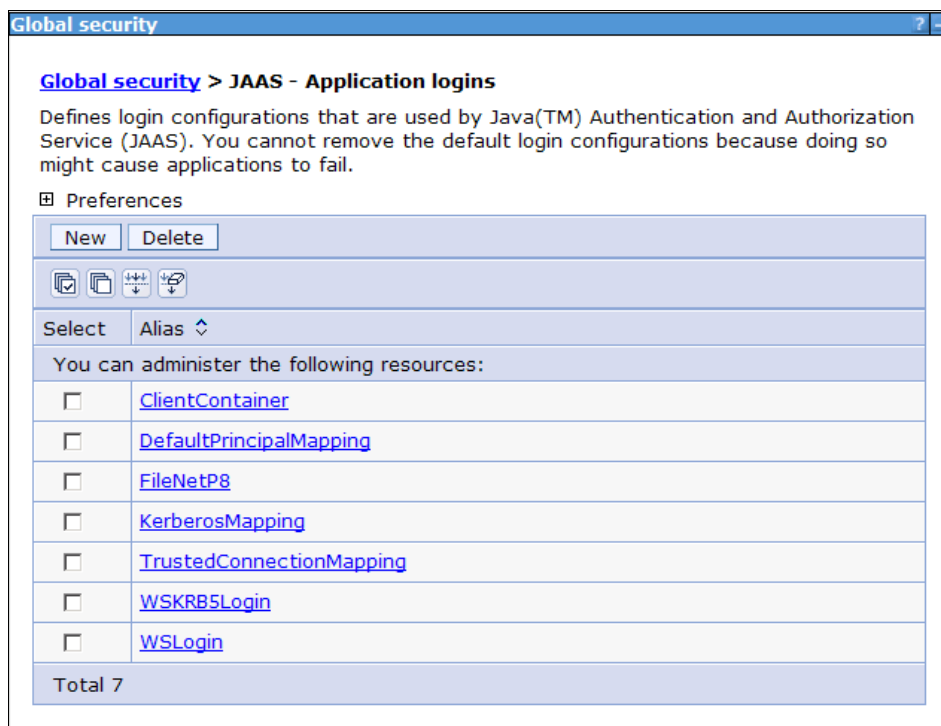


Figure 7-9 JAAS login modules

5. From the Case Manager administration client, close the task by clicking the **X** on the Configure Login Modules tab.

7.3.3 Configure LDAP task

The Configure LDAP task is used to define the directory service authentication settings for IBM Case Manager.

To configure an LDAP repository in WebSphere for use with IBM Case Manager, perform the following steps:

1. Open the Configure LDAP task for editing.
2. Enter the values appropriate for configuring your environment. For our test environment, the configuration parameters are shown in Figure 7-10 on page 187.

Configure LDAP

Enter the information for the directory service authentication settings for IBM Case Manager. Test LDAP Connection

Directory service provider type:	Tivoli Directory Server	
WebSphere Application Server LDAP repository type:	Federated repositories	
Directory service server host name:	cm-sseaix01-01	
Directory service port number:	389	
Directory service bind user name:	cn=P8Admin,o=acm	
Directory service bind user password:	*****	Confirm: *****
Base entry distinguished name (repository):	o=acm	
Login properties:	cn	
Federated repository virtual realm name:	defaultWIMFileBasedRealm	
Repository identifier:	cm-sseaix01-01	
Base entry distinguished name (realm):	o=acm	
Administrative console user name:	P8Admin	
	<input type="checkbox"/> Set as current active user registry	
Script:	/opt/IBM/CaseManagement/configure/scripts/configu	Browse...
Temporary directory:	/opt/IBM/CaseManagement/configure/tmp	Browse...
	<input type="checkbox"/> SSL enabled	

Figure 7-10 Configure LDAP task

Note: The parameters used to configure LDAP for IBM Case Manager should be the same as those settings specified when you configured LDAP for Content Engine.

3. Enter values for the Configure LDAP task appropriate for your environment and save the settings to your profile.

4. Run the Configure LDAP task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display.

5. From the Case Manager administration client, close the task by clicking the **X** in the Configure LDAP tab.
6. For LDAP configurations that utilize Tivoli Directory Server repository, you must manually edit the `wimconfig.xml` file on the Mashup Center server located in the following directory:

```
/MashupInstallDir/mm_profile/config/cells/cell_name/wim/config
```

Search for the value "userPassword" in the `wimconfig.xml` file and add a new stanza immediately following the stanza containing "userPassword" using the following format:

```
<config:attributes name="Login_attribute"
  propertyName="Login_property">
  <config:entityTypes>PersonAccount</config:entityTypes>
</config:attributes>
```

Example 7-2 shows the edits (in **bold**) made on our test environment for the following file:

```
/opt/IBM/MashupCenter/3.0/mm_profile/config/cells/cm-sseaix01-05Node
01Cell/wim/config/wimconfig.xml
```

Example 7-2 wimconfig.xml file

```
<config:attributeConfiguration>
  <config:attributes name="userPassword" propertyName="password"/>
  <config:attributes name="krbPrincipalName" propertyName="kerberosId">
    <config:entityTypes>PersonAccount</config:entityTypes>
  </config:attributes>
  <config:attributes name="cn" propertyName="cn">
    <config:entityTypes>PersonAccount</config:entityTypes>
  </config:attributes>
  <config:propertiesNotSupported name="homeAddress"/>
  <config:propertiesNotSupported name="businessAddress"/>
</config:attributeConfiguration>
```

7. Stop and restart WebSphere on the Mashup Center server.
8. Login to the WebSphere console on the Case Manager server and verify the LDAP repository was created. Click **Security** → **Global Security** and click the **Configure** button. Your LDAP repository should appear in the list of repositories for the realm, similar to that shown in Figure 7-11 on page 189.

<input type="button" value="Add Base entry to Realm..."/> <input type="button" value="Use built-in repository"/> <input type="button" value="Remove"/>			
Select	Base Entry	Repository Identifier	Repository Type
You can administer the following resources:			
<input type="checkbox"/>	o=acm	cm-sseaix01-01	LDAP:IDS6
<input type="checkbox"/>	o=defaultWIMFileBasedRealm	InternalFileRepository	File

Figure 7-11 LDAP repository

7.3.4 Import LTPA Key task

The Import LTPA Key task is used to enable security between Content Engine and Case Manager. To import the LTPA key, perform the following steps:

1. Open the Import LTPA Key task for editing.
2. Enter the values appropriate for importing the LTPA key for your environment. For our test development environment, the configuration parameters are shown in Figure 7-12

Figure 7-12 Import LTPA Key task

The following are guidelines to consider when configuring the Import LTPA Key task on your environment:

- The LTPA key file refers to the key you exported from your Content Engine in 6.2.6, “Export LTPA key from Content Engine server” on page 132. For this field, enter the fully qualified path to the LTPA key you copied to the Case Manager server.

- The LTPA key password must be the same as the password you specified when you exported the LTPA key on the Content Engine server.
- 3. Enter values for the Import LTPA Key task appropriate for your environment and save the settings to your profile.
- 4. Run the Import LTPA Key task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display.
- 5. From the Case Manager administration client, close the task by clicking the **X** in the Import LTPA Key tab.

7.3.5 Deploy Case Manager API task

The Deploy Case Manager API task is used to deploy the IBM Case Manager API WAR file to the application server. You must run the Configure Development Environment task prior to running the Deploy Case Manager API task.

To deploy the Case Manager API, perform the following steps:

1. Open the Deploy Case Manager API task for editing.
2. Enter the values appropriate for deploying the Case Manager API WAR file for your environment. For our test development environment, the configuration parameters are shown in Figure 7-13 on page 191.

***Deploy Case Manager API**

Deploy Case Manager API

Enter the information for deploying the IBM Case Manager API WAR file to the application server. Prerequisite: You must run the Configure Development Environment task before you run this task.

Deployment type: Standard

Case Manager API WAR file path: /opt/IBM/CaseManagement/configure/deploy/CaseManager.war Browse...

Case Manager API application name: CaseManager

Application server node: cm-sseaix01-05Node01

Application server name: server1

Application server virtual host: default_host

Case Manager REST URL: http://cm-sseaix01-05.usca.ibm.com:9080/CaseManager/CASEREST

CMIS URL: http://cm-sseaix01-05.usca.ibm.com:9080/CaseManager/resources

Script: /opt/IBM/CaseManagement/configure/scripts/deployRESTApplication.tc1 Browse...

Temporary directory: /opt/IBM/CaseManagement/configure/tmp Browse...

Figure 7-13 Deploy Case Manager API task

The following are guidelines to consider when configuring your development environment:

- The default location for the Case Manager API WAR file path is */CaseManagerInstallDir/configure/deploy/CaseManager.war*.
- A list of values for the Application server node, Application server name, and Application server virtual host fields are available through drop-down lists. It might take a few seconds for the tool to connect to the server to retrieve the list. If you input these values manually, be aware that these parameters are case-sensitive.
- Use the drop-down lists to select the appropriate values for the Case Manager REST URL and CMIS URL fields.
- The Case Manager REST URL refers to the URL used to deploy a case management solution. The default format is:
http://CaseManagerServer:port/CaseManager/CASEREST

- The CMIS URL refers to the URL the Case Manager Builder uses to retrieve and save case management solutions on the Content Engine. The default format is:

`http://CaseManagerServer:port/CaseManager/resources`

Note: The port number used by both the Case Manager REST URL and CMIS URL is the WC_defaulthost port used by the application server where the Case Manager is deployed. You can verify this port number in the WebSphere console by clicking **Servers** → **Server Types** → **WebSphere application servers** → **server_name** → **Ports**.

3. After you have entered your configuration parameters for the Deploy Case Manager API task, save the settings to your profile.
4. Run the Deploy Case Manager API task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display.

5. At completion of the task, verify the deployment by browsing to the Case Manager REST URL info page. For example:

`http://cm-sseaix01-05:9080/CaseManager/CASEREST/v1/info`

Results should look similar to those shown in Figure 7-14 on page 193.

Key	Value
Product name	IBM Case Manager - 5.0.0
Case Management Build	acmint5.0.0.000.464
Operating System	AIX 6.1
JVM	<div> <div>java.vm.vendor</div> <div>IBM Corporation</div> </div> <div> <div>java.vm.name</div> <div>IBM J9 VM</div> </div> <div> <div>java.runtime.version</div> <div>pap3260sr7ifx-20100707_01 (SR7)</div> </div> <div> <div>java.runtime.name</div> <div>Java(TM) SE Runtime Environment</div> </div> <div> <div>java.vm.version</div> <div>2.4</div> </div> <div> <div>java.vm.info</div> <div>JRE 1.6.0 IBM J9 2.4 AIX ppc-32 jvmap3260sr7-20100219_54049 (JIT enabled, AOT enabled) J9VM - 20100219_054049 JIT - r9_20091123_13891 GC - 20100216_AA</div> </div> <div> <div>java.fullversion</div> <div>JRE 1.6.0 IBM J9 2.4 AIX ppc-32 jvmap3260sr7-20100219_54049 (JIT enabled, AOT enabled) J9VM - 20100219_054049 JIT - r9_20091123_13891 GC - 20100216_AA</div> </div>
Date	Fri Nov 19 21:12:13 PST 2010
Classpath	/opt/IBM/MashupCenter/3.0/mm_profile/properties:/opt/IBM/MashupCenter/3.0/AppServer/properties:/opt/IBM/MashupCenter/3.0/AppServer/lib/startup.jar:/opt/IBM/MashupCenter/3.0/AppServer/lib/bootstrap.jar:/opt/IBM/MashupCenter/3.0/AppServer/lib/jsf-nls.jar:/opt/IBM/MashupCenter/3.0/AppServer/lib/Improx.jar:/opt/IBM/MashupCenter/3.0/AppServer/lib/urlprotocols.jar:/opt/IBM/MashupCenter/3.0/AppServer/deploytool/itp/batchboot.jar:/opt/IBM/MashupCenter/3.0/AppServer/deploytool/itp/batch2.jar:/opt/IBM/MashupCenter/3.0/AppServer/java/lib/tools.jar
Case Builder Build	acmsold5.0.0.000.308
Case Client Build	acmcr5.0.0.000.454
CE Client Build	dap452.227
PE Client Build	pui460.405
CMIS Build	ecmcmis100.932
CE URI	iiop://hq-maui:2809/FileNet/Engine
Working Directory	/opt/IBM/MashupCenter/3.0/mm_profile

Figure 7-14 Case Manager REST URL info page

- From the Case Manager administration client, close the task by clicking the **X** on the Deploy Case Manager API tab.

7.3.6 Deploy Case Manager Builder Application task

The Deploy Case Manager Builder Application task is used to deploy the IBM Case Manager Builder EAR file to the application server.

Note: You must run the Deploy Case Manager API task before running the Deploy Case Manager Builder Application task.

To deploy the Case Manager Builder, perform the following steps:

1. Open the Deploy Case Manager Builder Application task for editing.
2. Enter the values appropriate for deploying the Case Manager Builder EAR file for your environment. For our test development environment, the configuration parameters are shown in Figure 7-15.

*Deploy Case Manager Builder Application

Deploy Case Manager Builder Application

Enter the information for deploying the Case Manager Builder EAR file to the application server. Prerequisite: You must run the Deploy Case Manager API task before you run this task.

Deployment type: Standard

Case Manager Builder EAR file path: /opt/IBM/CaseManagement/configure/deploy/CaseBuilder.ear Browse...

Case Manager Builder application name: CaseBuilder

Application server node: cm-sseaix01-05Node01

Application server name: server1

Application server virtual host: default_host

Script: /opt/IBM/CaseManagement/configure/scripts/deployCBApplication.t Browse...

Temporary directory: /opt/IBM/CaseManagement/configure/tmp Browse...

Figure 7-15 Deploy Case Manager Builder Application

The following are guidelines to consider when configuring your development environment:

- The default location for the Case Manager Builder EAR file path is */CaseManagerInstallDir/configure/deploy/CaseBuilder.ear*.

- A list of values for the Application server node, Application server name, and Application server virtual host fields are available through drop-down lists. It might take a few seconds for the tool to connect to the server to retrieve the list. If you input these values manually, be aware that these parameters are case-sensitive.
3. After you have entered your configuration parameters for the Deploy Case Manager Builder Application task, save the settings to your profile.
 4. Run the Deploy Case Manager Builder Application task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display.

5. At the completion of this task, stop and restart the WebSphere application server on the Mashup Center so the JVM parameters configured for the Case Manager Builder application take effect.
6. Verify the deployment by browsing to the Case Manager Builder application URL. For example:

`http://cm-sseaix01-05:9080/CaseBuilder`

You should see the Case Manager Builder login window as shown in Figure 7-16 on page 196.

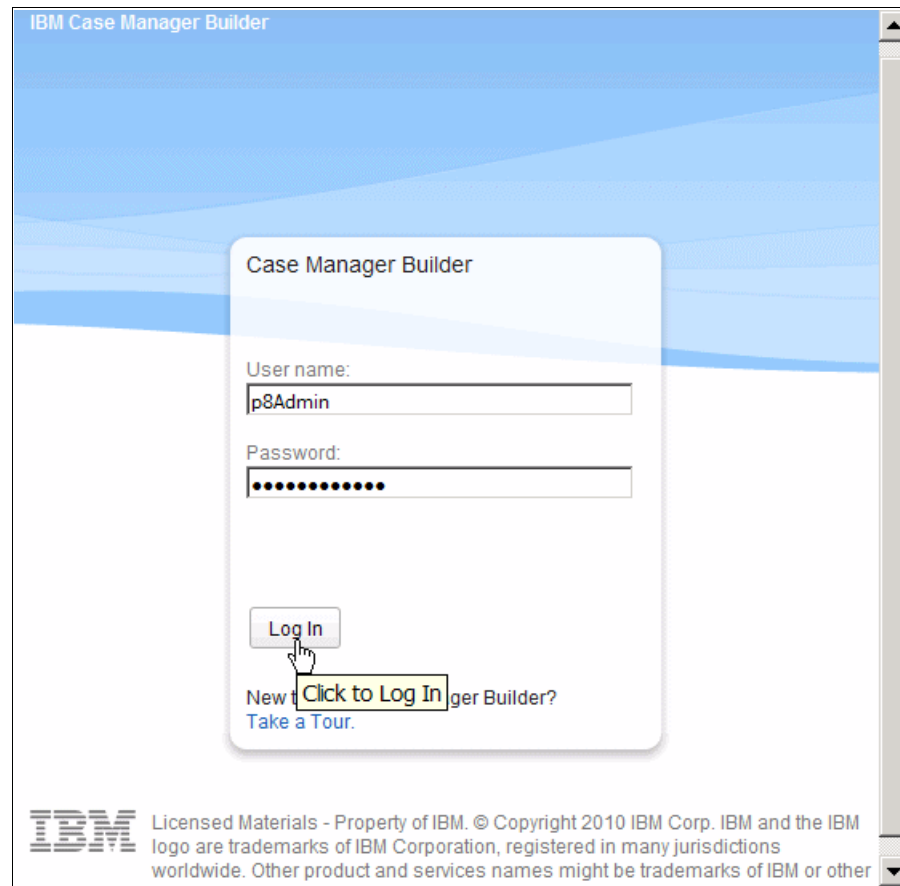


Figure 7-16 Case Manager Builder login window

7. Log in as an LDAP user that has rights to the Case Manager Builder development environment. A successful login will load the Case Manager Builder solutions page as shown in Figure 7-17 on page 197.

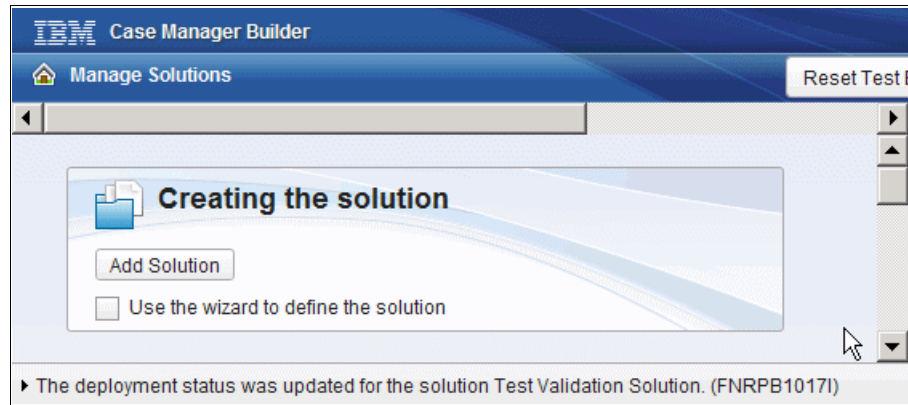


Figure 7-17 Case Manager Builder solutions page

7.4 Configure Workplace XT for the Case Manager environment

In Case Manager environments, Workplace XT must be deployed to the same WebSphere Application Server instance as IBM Mashup Center. At this point in our procedure, the following pre-requisite tasks for deploying Workplace XT have been completed:

- ▶ Workplace XT application installation as described in section 6.4, “Installing Workplace XT for Case Manager” on page 149
- ▶ Content Engine and Process Engine client files installation as described in section 6.6, “Installing FileNet P8 client files” on page 159
- ▶ LDAP configuration for Case Manager server as described in “Configure LDAP task” on page 186
- ▶ LTPA key import to Case Manager server as described in “Import LTPA Key task” on page 189

Note: If your configuration includes IBM FileNet eForms, make sure you install the FileNet eForms software prior to deploying Workplace XT.

7.4.1 Deploy Workplace XT

Complete the following steps to deploy the Workplace XT EAR file to the IBM Mashup Center application server:

1. From the WebSphere administrative console, click **Applications** → **New Application** and then click **New Enterprise Application**.
2. Select the file `/opt/IBM/FileNet/WebClient/deploy/web_client.ear` and click **OK**. Click **Next**.
3. Select **Fast Path** for the installation type and click **Next**.
4. On Step 1: Select installation options, verify the application name is set to `Workplace XT` and click **Next**.
5. On Step 2: Map modules to servers, verify the Workplace XT module is mapped to the same application server used by Mashup Center. Click **Next**.
6. On Step 3: Map virtual hosts for Web modules, verify that `WorkplaceXT` is mapped to the `default_host` virtual host and click **Next**.
7. On Step 4: Summary, review the information and click **Finish**.
8. Click **Save directly to the master configuration**.

7.4.2 Complete post-deployment configuration for Workplace XT

Perform the following steps to complete the post-deployment configuration for Workplace XT:

1. Click **Applications** → **Application Types** → **WebSphere enterprise applications** and select **Workplace XT**.
2. Click the link for **Class loading and update detection**.
3. Set the value for Polling interval for updated files to a number appropriate for your environment, for example, 3 seconds.
4. Set the Class loader order option to **Classes loaded with local class loader first (parent last)**. Click **Apply** and **Save directly to the master configuration**.
5. From the list of applications, select Workplace XT again. Click the link to **Manage Modules**.
6. In the Modules column, click **Workplace XT**.
7. Set the Class loader order field to **Classes loaded with local class loader first (parent last)**. Click **Apply** and **Save directly to the master configuration**.

8. Click **Applications** → **Application Types** → **WebSphere enterprise applications** and select **Workplace XT**.
9. Click the link for **Security role to user/group mapping**.
10. Select the **All Authenticated** role, click the **Map Special Subjects** button, and select **All Authenticated in Application's Realm** from the list.
11. Select the **Everyone** role, click the **Map Special Subjects** button, and select **Everyone** from the list.
12. Click **OK** and **Save directly to the master configuration**.
13. (Windows® only) From the Windows Services Console, restart the Process Workplace XT Services Manager service.
14. Restart Process Task Manager and Component Manager. Exit the Process Task Manager application.
15. Stop and restart the WebSphere application server.

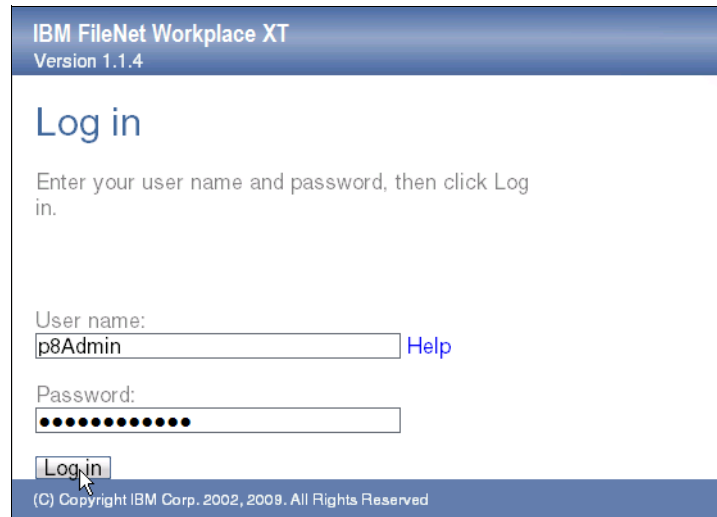
7.4.3 Validate Workplace XT deployment

Verify that you can login to Workplace XT and set the site preferences by performing the following steps:

1. Verify the deployment by browsing to the Workplace XT application URL, for example:

`http://cm-sseaix01-05:9080/WorkplaceXT`

You should see the WorkplaceXT login window as shown in Figure 7-18 on page 200.



The image shows a web browser window for the IBM FileNet Workplace XT login page. The title bar at the top reads "IBM FileNet Workplace XT" and "Version 1.1.4". The main heading is "Log in". Below the heading, a message says "Enter your user name and password, then click Log in." There are two input fields: "User name:" with the text "p8Admin" and a "Help" link to its right; and "Password:" with a masked password represented by dots. A "Log in" button is located below the password field. At the bottom of the window, a copyright notice reads "(C) Copyright IBM Corp. 2002, 2009. All Rights Reserved".

Figure 7-18 Workplace XT login window

2. If login is successful, you will be prompted to enter the bootstrap settings appropriate for your environment. The bootstrap parameters used in our test environment are shown in Figure 7-19 on page 201.

Bootstrap Settings

Security Info

SSL Host:Port

Java Server HTTP Port

User Token Settings

Generate user tokens

Accept user tokens

Token timeout interval (minutes) (Range = 1 - 15)

Preference Settings

Object Store name

Preference name

Documentation Server

ISRA Interface Servlet URL

Application Integration

Outlook - Prompt to add email on Send

Figure 7-19 Bootstrap settings

- Assign LDAP users and groups to the **Application Engine Administrators** role as shown in Figure 7-20.

Access Roles

Application Engine Administrators

[Add new members](#) [Rename Role](#)

Allowed access



	P8Admin	remove
	P8Admins	remove

Figure 7-20 Application Engine Administrators role

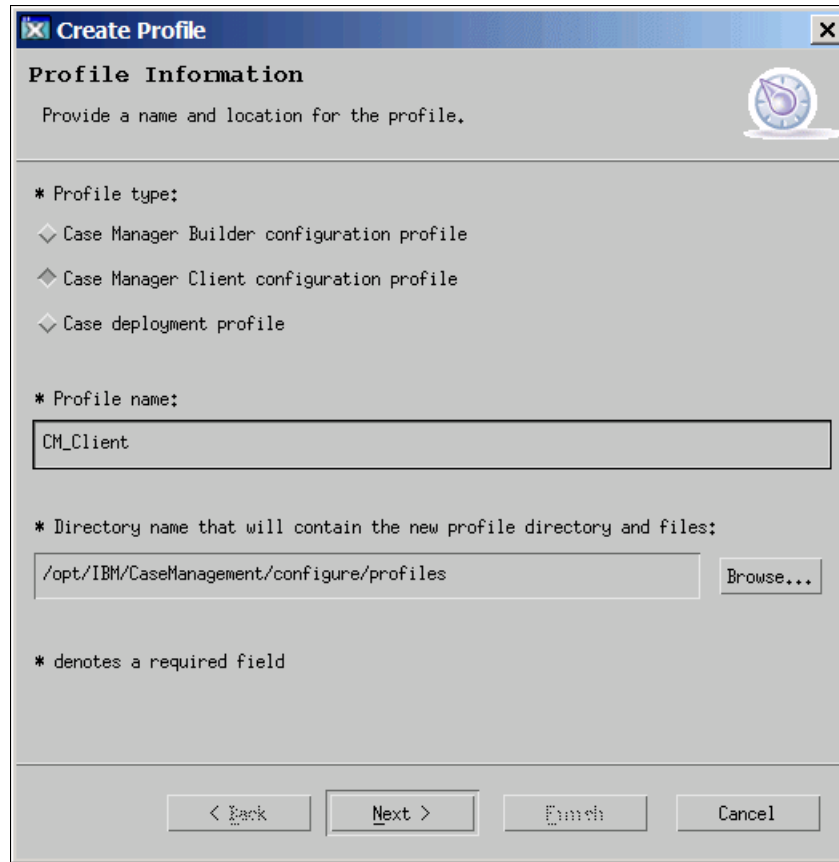
- Click **OK** to apply the initial bootstrap settings for Workplace XT.
- Open the Workplace XT site preferences. On the General Settings page, under Tasks, select a **Process Engine Connection Point** from the drop-down list. Click **Apply**, then click **Exit**.
- Complete the following tasks to establish and verify the connection between Workplace XT and Process Engine.

- Verify you can launch the Process Configuration Console and connect to the isolated region previously linked to the target object store in 6.2.5, “Link target object store to isolated region” on page 131.
- Configure the Component Manager. Refer to the Configure Component Manager topic at the following URL for more information about this task:
http://publib.boulder.ibm.com/infocenter/p8docs/v5r0m0/index.jsp?topic=/com.ibm.p8.pe.taskmgrui.doc/cm_config.htm

7.5 Configure Case Manager Client

The next step is to configure and deploy the Case Manager Client application. Create a Case Manager Client configuration profile using the following steps:

1. From Case Manager Administration Client, click **File** → **Create Profile** from the menu bar.
2. For the Profile type field, select **Case Manager Client configuration profile**. Type a name for the profile and select the location where you want to have the new profile directory created. See example profile information in Figure 7-21 on page 203. Click **Next** to continue.



Create Profile

Profile Information

Provide a name and location for the profile.

* Profile type:

- ☐ Case Manager Builder configuration profile
- ☐ Case Manager Client configuration profile
- ☐ Case deployment profile

* Profile name:

CM_Client

* Directory name that will contain the new profile directory and files:

/opt/IBM/CaseManagement/configure/profiles Browse...

* denotes a required field

< Back Next > Finish Cancel

Figure 7-21 Sample profile information

3. The Case Manager Client profile requires information about the Mashup Center application server profile (mm_profile) to configure and deploy the client application. The values configured for our test development environment are shown in Figure 7-22 on page 205. The following are guidelines to consider when configuring this profile for your environment:
 - The Application server administrator user name is the same as the administrative user name you provided when you installed IBM Mashup Center.
 - The WebSphere Application server SOAP port can be verified by logging in to the WebSphere Administrative Console for the IBM Mashup Center server.

Note: The port number used for the Application server SOAP port is the SOAP_CONNECTOR_ADDRESS port used by the application server where the Mashup Center is deployed. You can verify this port number in the WebSphere console on the Mashup Center server by clicking **Servers → Server Types → WebSphere application servers → server_name → Ports**.

- If the parameters for the Application server host and SOAP port are correct, you should be able to select the **Application server cell** from the drop-down list. It might take a few seconds for the tool to connect to the server to retrieve the cell name list.
- Click the **Test Connection** button to verify the connection between the administration client and the application server. Testing the connection is optional. If the test fails, ensure that the application server is running and that the values that you entered for the application server properties are correct.

After you have entered all the required parameters, click **Next** to continue.

Edit Case Manager Client Configuration Profile Properties

Set properties for Case Manager Client configuration profile

Provide values for the required profile properties.

* Application server installation directory: /opt/IBM/MashupCenter/3.0/AppServer Browse...

* Application server profile directory: /opt/IBM/MashupCenter/3.0/mm_profile Browse...

* Application server administrator user name: MashupAdmin

* Application server administrator password: ***** Confirm: *****

* Application server host: cm-sseaix01-05.usca.ibm.com

* WebSphere Application Server SOAP port: 8880

* Application server cell: cm-sseaix01-05Node01Cell

Test Connection

* denotes a required field

Finish Cancel

Figure 7-22 Sample Case Manager Client configuration profile properties

4. Select the tasks to include in your profile. For our example, we selected all the tasks in the list as shown in Figure 7-23 on page 206. Click **Finish** to complete the profile.

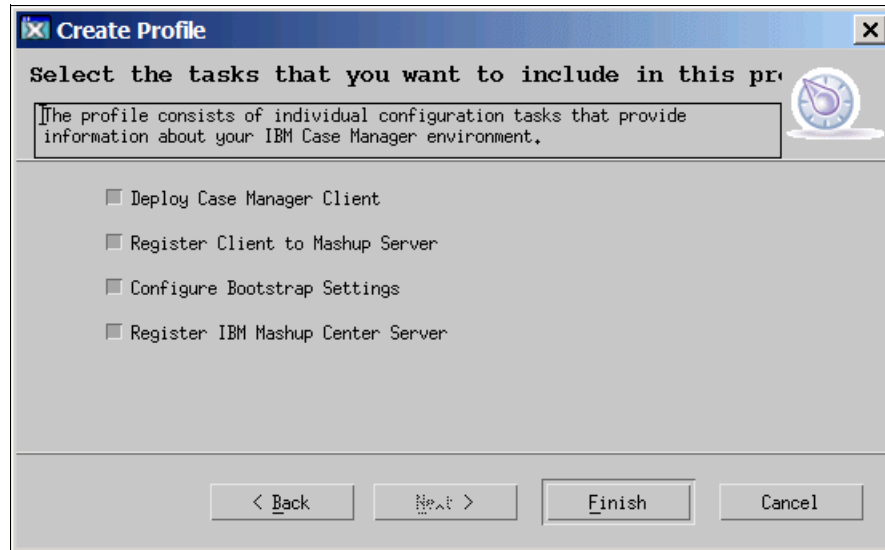


Figure 7-23 asks lists for Case Manager Client configuration profile

5. The new profile with the list of configuration tasks is displayed in the left pane of the administration client as shown in Figure 7-24.

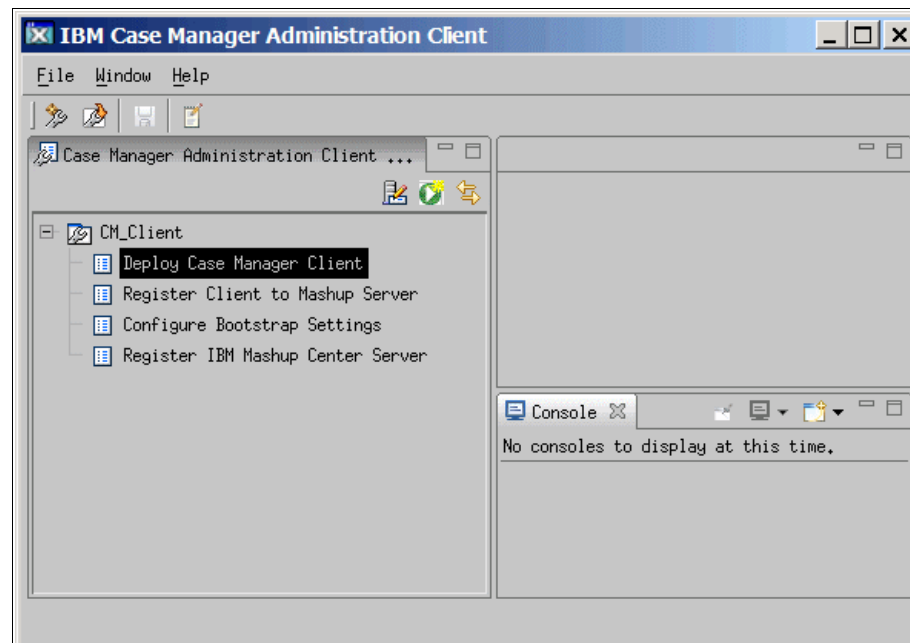


Figure 7-24 New client profile and configuration task

7.5.1 Deploy Case Manager Client task

The Deploy Case Manager Client task is used to deploy the IBM Case Manager Client to the application server. This task performs the following actions:

- ▶ Deploys the Case Manager Client WAR file
- ▶ Deploys the Case Management theme
- ▶ Deploys the Case Manager Client login page
- ▶ Deploys the IBM FileNet P8 eForms service
- ▶ Redeploys Workplace XT to enable the eForm service (optional)

To complete the Deploy Case Manager Client task, perform the following steps:

1. Open the Deploy Case Manager Client task for editing.
2. Enter the values appropriate for deploying the Case Manager Client WAR file for your environment. For our test environment, the configuration parameters are shown Figure 7-25.

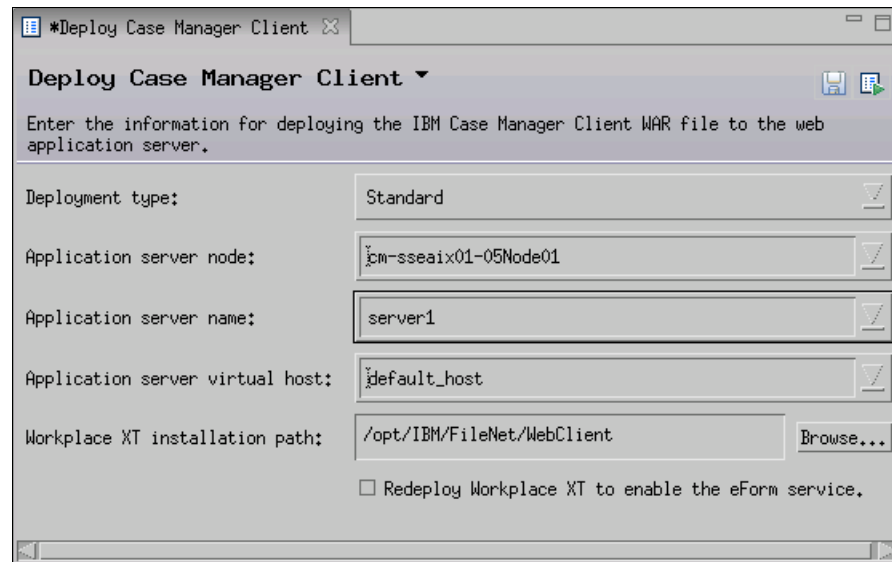


Figure 7-25 Deploy Case Manager Client task

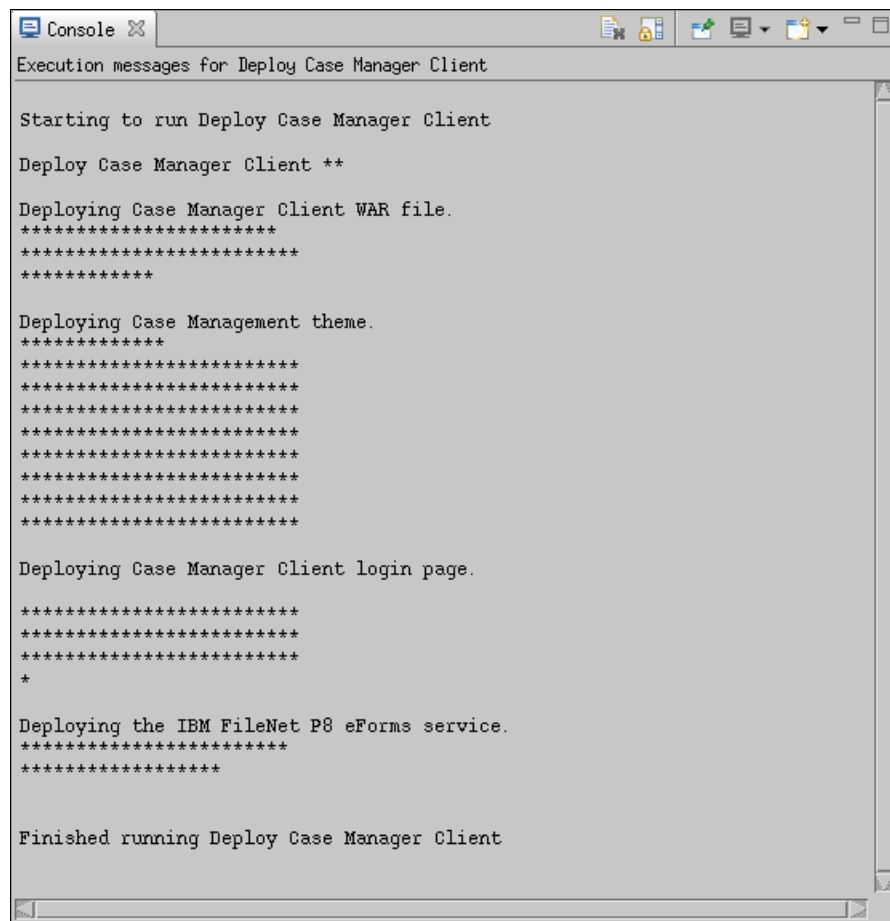
The following are guidelines to consider when configuring your development environment:

- A list of values for the Application server node, Application server name, and Application server virtual host fields are available through drop-down lists. It might take a few seconds for the tool to connect to the server to

retrieve the list. If you input these values manually, be aware that these parameters are case-sensitive.

- Select the option to **Redeploy Workplace XT to enable the eForm service** if your system includes integration with IBM FileNet P8 eForms.
3. After you have entered your configuration parameters for the Deploy Case Manager Client task, save the settings to your profile.
 4. Run the Deploy Case Manager Client task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display. Output should look similar to Figure 7-26.



```
Console
Execution messages for Deploy Case Manager Client

Starting to run Deploy Case Manager Client

Deploy Case Manager Client **

Deploying Case Manager Client WAR file.
*****
*****
*****

Deploying Case Management theme.
*****
*****
*****
*****
*****
*****
*****

Deploying Case Manager Client login page.

*****
*****
*****
*

Deploying the IBM FileNet P8 eForms service.
*****
*****

Finished running Deploy Case Manager Client
```

Figure 7-26 Execution messages for Deploy Case Manager Client

5. From the Case Manager administration client, close the task by clicking the **X** on the Deploy Case Manager Client tab.

7.5.2 Register Client to Mashup Server task

The Register Client to Mashup Server task is used to register the IBM Case Manager Client application with the IBM Mashup Center Server. This task performs the following actions:

- ▶ Adds the IBM Case Manager widgets to IBM Mashup Center palette
- ▶ Deploys the Case Manager space templates
- ▶ Deploys the Case Manager welcome space

To complete the Register Client to Mashup Server task, do the following steps:

1. Open the Register Client to Mashup Server task for editing.
2. Enter the values appropriate for registering the client to the Mashup Server for your environment. For our test environment, the configuration parameters are shown Figure 7-27.

Register Client to Mashup Server

Enter the information for registering the IBM Case Manager Client application with the IBM Mashup Center Server.

Test IBM Mashup Center connection

Deployment type: Standard

Application server node: cm-sseaix01-05Node01

Application server name: server1

IBM Mashup Center host name: cm-sseaix01-05.usca.ibm.com

IBM Mashup Center HTTP port: 9080

IBM Mashup Center administrative user name: MashupAdmin

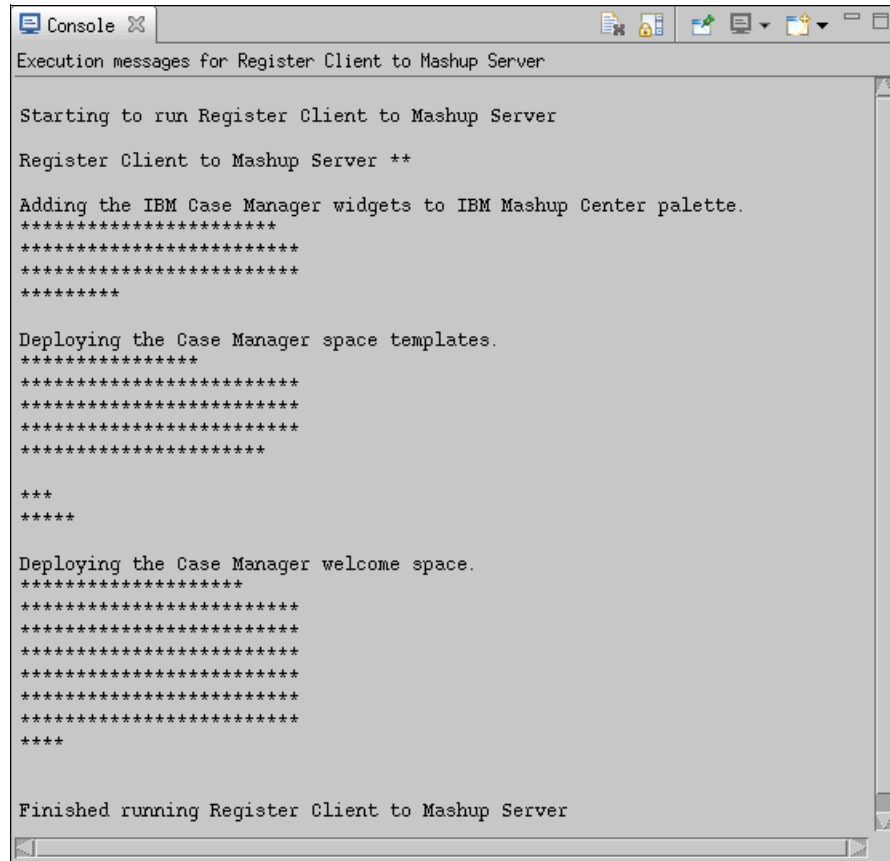
IBM Mashup Center password: ***** Confirm: *****

Figure 7-27 Register Client to Mashup Server task

The following are guidelines to consider when configuring your environment:

- A list of values for the Application server node and Application server name fields are available through drop-down lists. It might take a few seconds for the tool to connect to the server to retrieve the list. If you input these values manually, be aware that these parameters are case-sensitive.
 - The IBM Mashup Center administrative user name and password are the same as the values specified during the Mashup Center installation.
3. After you have entered your configuration parameters for the Register Client to Mashup Server task, save the settings to your profile.
 4. Run the Register Client to Mashup Server task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display. Output should look similar to Figure 7-28 on page 211.



```
Console
Execution messages for Register Client to Mashup Server

Starting to run Register Client to Mashup Server

Register Client to Mashup Server **

Adding the IBM Case Manager widgets to IBM Mashup Center palette.
*****
*****
*****
*****

Deploying the Case Manager space templates.
*****
*****
*****
*****
*****

***
*****

Deploying the Case Manager welcome space.
*****
*****
*****
*****
*****
*****
*****
*****
*****

****

Finished running Register Client to Mashup Server
```

Figure 7-28 Execution messages for Register client to Mashup Server

5. From the Case Manager administration client, close the task by clicking the **X** on the Register Client to Mashup Server tab.

7.5.3 Configure Bootstrap Settings task

The Configure Bootstrap Settings task is used to configure startup information for the application. To complete this task, perform the following steps:

1. Open the Configure Bootstrap Settings task for editing.
2. Enter the bootstrap settings appropriate for your environment. For our test environment, the configuration parameters are shown in Figure 7-29 on page 212.

Configure Bootstrap Settings

Enter the information for configuring the Case Manager Client bootstrap settings. The bootstrap settings provide startup information for the application. Test Context Root and URL

Deployment type:	Standard
Application server node:	cm-sseaix01-05Node01
Application server name:	server1
Case Manager API context root:	/CaseManager
Workplace XT context root:	/WorkplaceXT
Lotus Sametime Proxy Server URL:	https://hostname:port
Lotus Sametime Proxy Server polling:	Disabled (Default)
Process Engine connection point for Lotus Sametime:	
IBM Mashup Center URL:	http://cm-sseaix01-05.usca.ibm.com:9080/mum/enabler

Figure 7-29 Configure Bootstrap Settings task

The following are guidelines to consider when configuring your environment:

- A list of values for the Application server node and Application server name fields are available through drop-down lists. It might take a few seconds for the tool to connect to the server to retrieve the list. If you input these values manually, be aware that these parameters are case-sensitive.
- The default Case Manager API context root setting is /CaseManager.
- The default Workplace XT context root setting is /WorkplaceXT.
- The following settings for IBM Lotus Sametime are used to enable chat services in the case management solution client view:

Lotus Sametime Proxy Server URL

Lotus Sametime Proxy Server polling

Process Engine connection point for Lotus Sametime

Note: If you will not be using IBM Lotus Sametime integration, leave the default value for these parameters.

- The following are the available options for the Lotus Sametime Proxy Server polling setting:

Disabled (Default): the Lotus Sametime awareness feature is disabled.

Display Lotus Sametime status after a click action: the case worker must click the mouse before an update request is sent to the Process Engine server to obtain a user's email for use with Lotus Sametime.

Display Lotus Sametime status automatically: requests are sent whenever necessary to the Process Engine server to obtain a user's email. This option can slow performance. For improved performance, use the **Display Lotus Sametime status after a click action** option if you expect a large number of Sametime users

3. After you have entered your configuration parameters for the Configure Bootstrap Settings task, save the settings to your profile.
4. Run the Configure Bootstrap Settings task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display. Output should look similar to Figure 7-30.

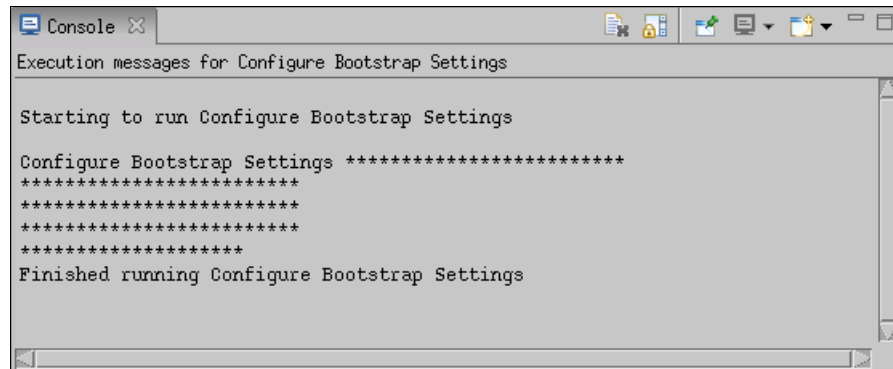


Figure 7-30 Execution messages for Configure Bootstrap Settings

5. From the Case Manager administration client, close the task by clicking the **X** in the Configure Bootstrap Settings tab.

7.5.4 Register IBM Mashup Center Server task

The Register IBM Mashup Center Server task is used to associate the IBM Mashup Center Server with a connection profile. To complete this task, perform the following steps:

1. Open the Register IBM Mashup Center Server task for editing.
2. Enter the values appropriate for registering the IBM Mashup Center server in your environment. For our test environment, the configuration parameters are shown in Figure 7-31.

The screenshot shows a window titled '*Register IBM Mashup Center Server'. Below the title bar is a header area with the text 'Register IBM Mashup Center Server' and a dropdown arrow. Below this is a subtitle: 'Enter the information for associating the IBM Mashup Center Server with a connection profile.' The main area contains several labeled input fields: 'Deployment type:' with a dropdown menu showing 'Standard'; 'Application server node:' with a text box containing 'cm-sseaix01-05Node01'; 'Application server name:' with a text box containing 'server1'; 'Content Engine WSI URL:' with a text box containing 'http://hq-maui:9080/wsi/FNCEWS40MTOM/'; 'Content Engine user name:' with a text box containing 'p8Admin'; 'Content Engine password:' with a masked text box (asterisks) and a 'Confirm:' label followed by another masked text box; 'Design object store name:' with a text box containing 'CMDOS'; and 'Connection definition name:' with a text box containing 'dev_env_connection_definition'. Each text box has a small icon in the top right corner.

Figure 7-31 Register IBM Mashup Center Server

The following are guidelines to consider when configuring your environment:

- A list of values for the Application server node and Application server name fields are available through drop-down lists. It might take a few seconds for the tool to connect to the server to retrieve the list. If you input these values manually, be aware that these parameters are case-sensitive.
- Use the following format for the Content Engine WSI URL:
`http://ceserver:port/wsi/FNCE40MTOM/`

Note: The port number used for the Content Engine WSI URL is the WC_defaulthost port used by the application server where the Content Engine is deployed. You can verify this port number in the WebSphere console by clicking **Servers** → **Server Types** → **WebSphere application servers** → **server_name** → **Ports**.

- The Content Engine user name must be a member of both the Content Engine and Process Engine administrators group.
- A list of values for the Design object store name field is retrieved from the Content Engine server. It might take a few seconds for the tool to connect to the server to retrieve the object store list. If the drop-down list for this field is not populated, check your Content Engine URL entry and username/password values.
- A list of values for the Connection definition name are retrieved from the design object store. In our example, the **dev_env_connection_definition** was created when we ran the Configure Development Environment task as part of the IBM Case Manager Builder configuration.

Note: In the initial release of Case Manager, the **dev_env_connection_definition** is the only connection definition available for development environments.

3. After you have entered your configuration parameters for the Register IBM Mashup Center Server task, save the settings to your profile.
4. Run the Register IBM Mashup Center Server task. To run a task, right-click the task name in the left pane, then select **Run Task** from the context menu.

Monitor the progress of the running task in the console located in the lower right pane of the administration client display. Output should look similar to Figure 7-32 on page 216.

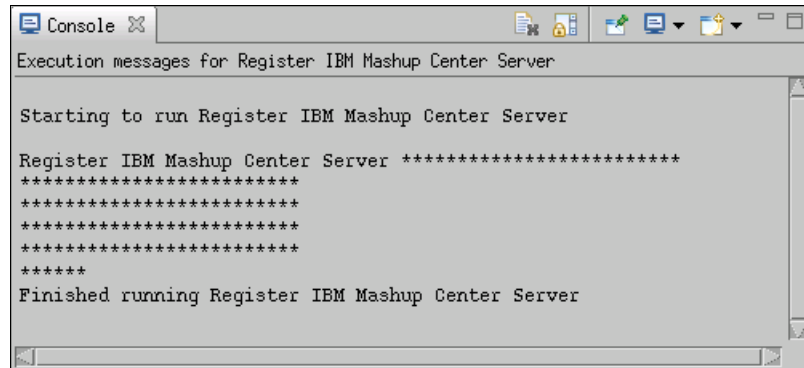


Figure 7-32 Execution messages for Register IBM Mashup Center Server

5. From the Case Manager administration client, close the task by clicking the **X** on the Register IBM Mashup Center Server tab.

7.6 Configure LTPA timeout for Case Manager Builder

To prevent timeout issues with Case Manager Builder, you must set the Lightweight Third Party Authentication (LTPA) timeout value to prevent timeout issues with Case Manager Builder using the following steps:

1. Log in to the WebSphere administration console on the Mashup Center server.
2. Click **Security** → **Global security**. Under the Authentication section on the right side of the window, click the **LTPA** link.
3. Set the LTPA timeout parameter to a value appropriate for your environment. The default is 120 minutes, or two hours. Our recommendation is 3600 minutes as shown in Figure 7-33 on page 217.

Note: The value you set for the LTPA timeout will determine the max value you can configure for the custom property **cacheCushionMax** in the next steps. The **cacheCushionMax** cannot be larger than 1/5 the **LTPA timeout** value. In our test Development environment, we configured the Case Manager Builder timeout for 12 hours, or 720 minutes. Therefore, we set the LTPA timeout to 3600 minutes, which is 720 x 5.

Global security > **LTPA**

Encrypts authentication information so that the application server can send the data from one server to another in a secure manner. The encryption of authentication information that is exchanged between servers involves the LTPA mechanism.

Key generation

Authentication data is encrypted and decrypted by using keys that are kept in one or more key stores.

Key set group

■ [Key set groups](#)

LTPA timeout

LTPA timeout value for forwarded credentials between servers
 minutes

Cross-cell single sign-on

Single sign-on across cells can be provided by sharing keys and passwords. To share the keys and password, log on to one cell, specify a key file, and click Export keys. Then, log on to the other cell, specify the key file, and click Import keys.

* Password

* Confirm password

Fully qualified key file name

Figure 7-33 LTPA timeout setting

4. Click **OK**, then click **Save changes directly to the master configuration**.
5. Click **Servers** → **Server Types** → **WebSphere application Servers** → **server_name** and select the Configuration tab.
6. In the Server Infrastructure section, click **Java and Process Management** → **Process definition**.
7. In the Additional Properties section, click **Java Virtual machine**.
8. Click **Custom properties**.

9. Click **New** to add a custom property to set the **cacheCushionMax**. The following table shows the values for the property definition we configured in our test environment. This value cannot be larger than 1/5 the **LTPA timeout** value that you configured in the previous steps.

Table 7-1 *cacheCushionMax parameters*

Property Parameter	Property Value
Name	com.ibm.ws.security.cacheCushionMax
Value	720

Input the property definition values as shown in Figure 7-34. Click **Apply** and **Save directly to the master configuration**.

Application servers

[Application servers](#) > [server1](#) > [Process definition](#) > [Java Virtual Machine](#) > [Custom properties](#) > **cacheCushionMax**

Use this page to specify an arbitrary name and value pair. The value that is specified for the name and value pair is a string that can set internal system configuration properties.

Configuration

General Properties

* Name
com.ibm.ws.security.cacheCushionMax

* Value
720

Description

Apply OK Reset Cancel

Figure 7-34 *cacheCushionMax custom property page*

Note: You must stop and restart the WebSphere application server for the custom property **cacheCushionMax** to take effect.

7.7 Configure Case Manager development environment security

The Case Manager Builder application includes an option to reset or re-initialize the target object store. To use this feature, the Business Analyst must have permissions to certain objects as shown in Table 7-2. You can enable the reset task for additional users, such as the Business Project Leads, by assigning rights to these users as well.

Table 7-2 Permissions required to reset or re-initialize the target object store

Object Permissions	Requirements
P8 Domain administration rights	Required to modify or update the Global Configuration Database (GCD) to drop and restore the Case Manager target object store.
Target object store administration rights	Required to enable the reset task. These permissions are usually granted at the time the target object store is created.
Design object store dev_env_connection_definiton folder administration rights	Required to enable the reset task
Process Engine configuration rights	Required to re-initialize the Process Engine region.

7.7.1 P8 Domain security settings

To grant users P8 Domain administration rights on the development domain, perform the following steps:

1. Open the FileNet Enterprise Manager snap-in, right-click the P8 Domain name (top node), and click **Properties**.
2. Click the Security tab. Click **Add**, and type the name of the Business Analyst user group, and any optional groups such as the Business Project Leads user group. Use the following guidelines to assign security to each of the groups added:
 - For **Type**, click **Allow**.
 - For **Apply To**, specify **This object only**.
 - For **Level**, click **Full Control**.
 - For **Rights**, select all of the choices.
3. Click **OK**.

7.7.2 Target object store security settings

Rights to the target object store are normally granted at the time the object store is created. You can use the following steps to verify permissions on the target object store:

1. Open the FileNet Enterprise Manager snap-in, right-click the target object store name, and click **Properties**.
2. Click the Security tab. Verify the Business Analyst user group, and any optional groups such as the Business Project Leads user group, have the following security assignments:
 - **Type** set to **Allow**.
 - **Apply To** set to **This object only**.
 - **Level** set to **Full Control**.
 - **Rights** checked for all selections.
3. Make changes if required. Click **OK** to exit.

7.7.3 Design object store security settings

To grant users administration rights to the **dev_env_connection_definition** folder in the design object store, perform the following steps:

1. Open the FileNet Enterprise Manager, and browse to the **dev_env_connection_definition** folder in the design object store as shown in Figure 7-35 on page 221.

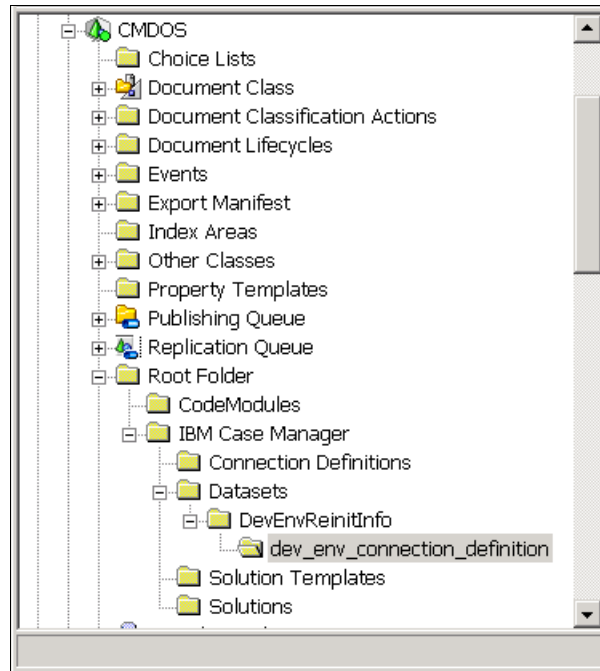


Figure 7-35 *dev_env_connection_definition* folder for CMDOS

2. Right-click the **dev_env_connection_definition** folder, and select **Properties**.
3. Click the Security tab. Click **Add**, and type the name of the Business Analyst user group, and any optional groups such as the Business Project Leads user group. Use the following guidelines to assign security to each of the groups added:
 - For **Type**, click **Allow**.
 - For **Apply To**, specify **This object and immediate children**.
 - For **Level**, click **Modify properties**.
4. Click **OK**.

7.7.4 Process Engine security settings

To set permissions necessary to re-initialize the Process Engine region, add the Business Project Leads and Business Analysts user groups to the Process Engine Configuration group. Perform the following steps to determine the name of the LDAP group assigned to the Process Engine Configuration role:

1. Launch the Process Task Manager application on the Process Engine server.
2. In the left pane, select the **Process Engine** node.
3. In the right pane, click the Security tab.
4. Note the value of the Configuration Group as shown in Figure 7-36. Users that require rights to re-initialize the development regions must be added to this group using your Directory Service Provider administration tool.

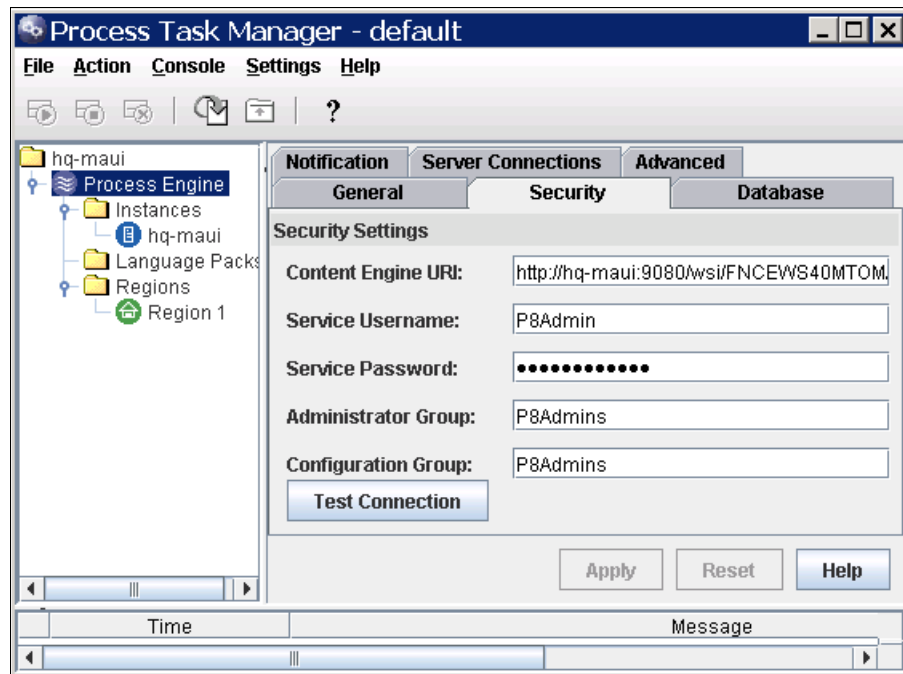


Figure 7-36 Process Engine Configuration Group setting



Validating Case Manager development system

This chapter describes the steps required to validate your Case Manager development system.

This chapter covers the following topics:

- ▶ Validating Case Manager development system overview
- ▶ Creating a test solution
- ▶ Adding a workflow diagram using Step Editor
- ▶ Deploying the test solution
- ▶ Testing the solution

Attention: This chapter describes only a portion of the steps required to set up a complete Case Manager environment. We strongly suggest reading (and exercising all the steps provided within) the following chapters in the given order to complete and understand the overall set up process:

1. Chapter 6, “Set up overview and installation” on page 123
2. Chapter 7, “Configuring Case Manager development system” on page 173
3. Chapter 8, “Validating Case Manager development system” on page 223
4. Chapter 9, “Configuring Case Manager production system” on page 261

8.1 Validating Case Manager development system overview

To validate the Case Manager development system, do the following:

1. Create a test solution using the IBM Case Manager Builder application.
2. Add a workflow diagram using the Step Editor.
3. Deploy the test solution to the development environment.
4. Test the solution using the IBM Case Manager Client application.

8.2 Creating a test solution

Complete the following steps to create a validation solution using the Case Manager Builder:

1. From your browser, launch the Case Manager Builder application. For our test system, the URL is:

`http://cm-sseaix01-05:9080/CaseBuilder`

Login as a user that is a member of the Business Analyst group, such as p8Admin, as shown in Figure 8-1 on page 225.

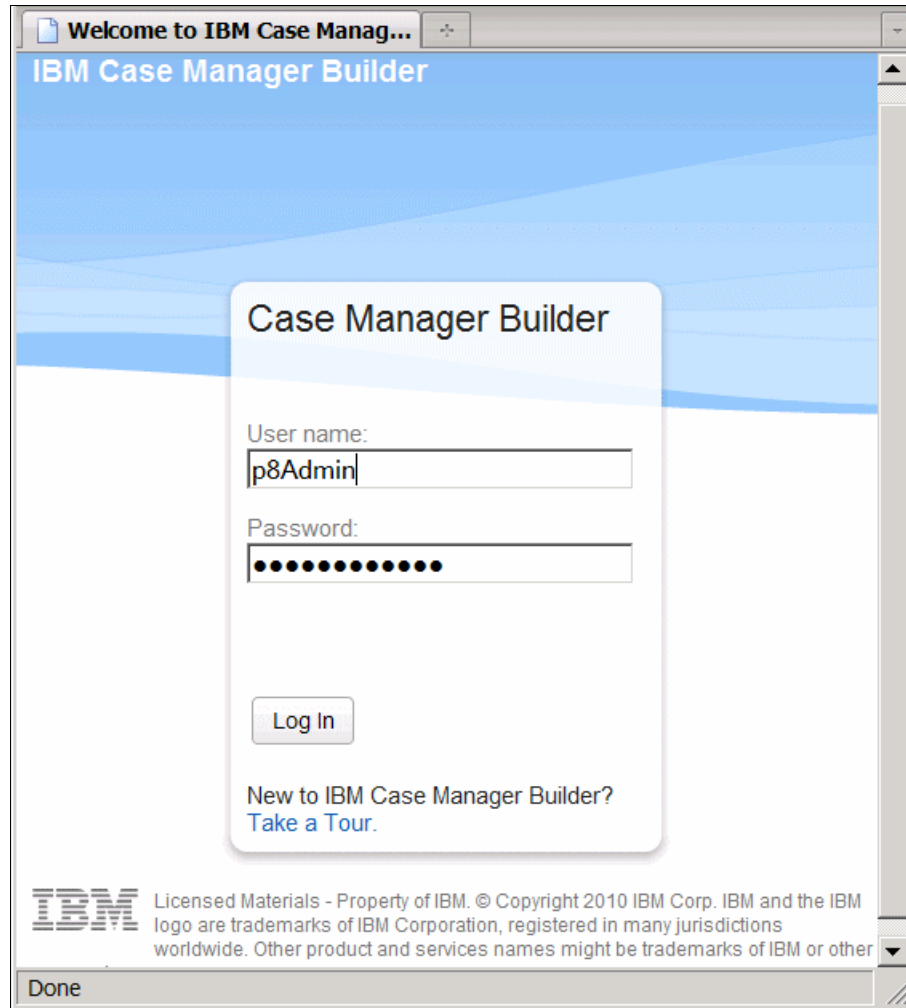


Figure 8-1 Case Manager Builder login window

2. To create a test solution, click the **Add Solution** button as shown in Figure 8-2 on page 226. Do not select the **Use the wizard to define the solution** check box.

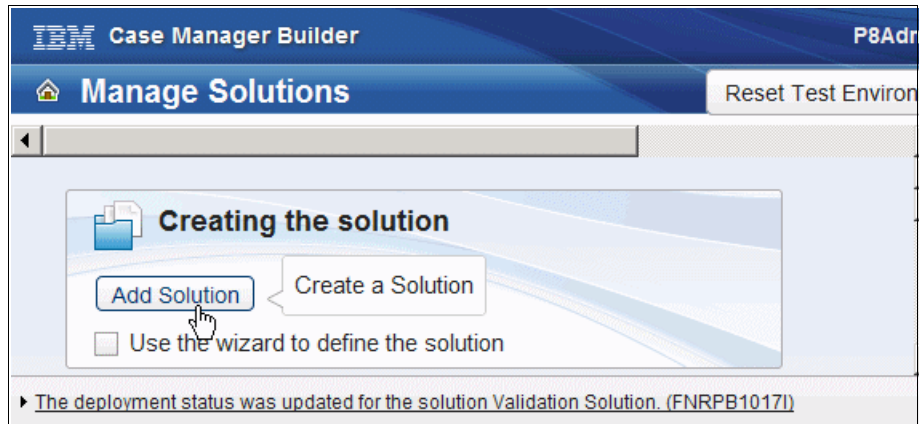


Figure 8-2 Add a new solution

3. Enter values to name your solution as shown in Figure 8-3 on page 227. The following are guidelines to consider when configuring your test solution:
 - The Name field is required.
 - The Solution prefix is a 2-5 character unique identifier for your solution. This prefix is prepended to names of objects you create for this solution so that the identifier is unique across all solutions. This field is required.
 - The Description field is optional.
 - You can change the icon for your solution by clicking the icon under the “Select an icon to identify your solution” heading.


After you have entered your values for naming the test solution, click **OK**.

Create a solution

*Name:
Test Validation Solution

*Solution prefix:
TEST1

Description:
Test solution for validation

Solution icon:


OK Cancel

Figure 8-3 Enter name for solution

4. Click the Properties tab and select **Add Property** → **New** as shown in Figure 8-4 on page 228.

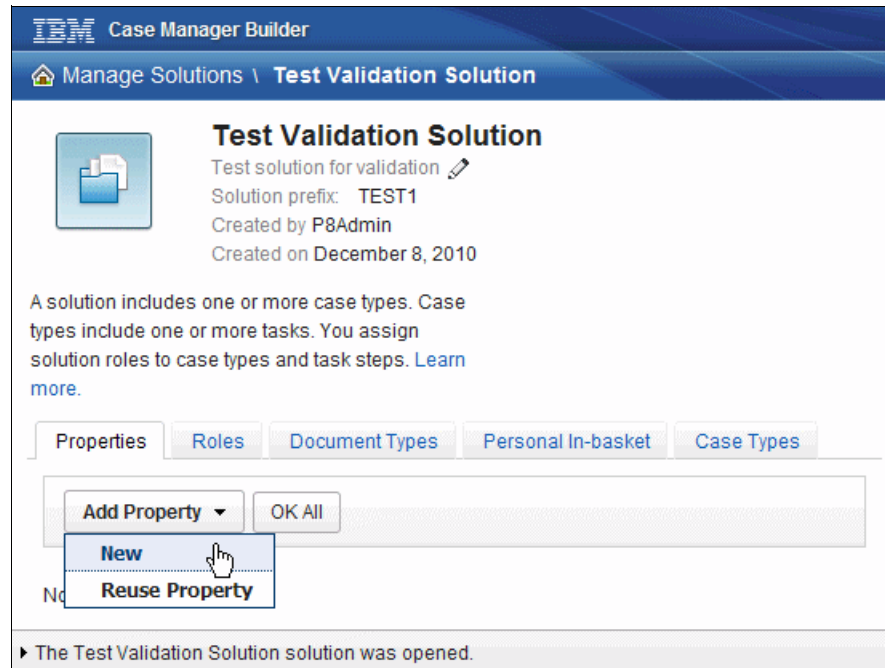


Figure 8-4 Add new property

5. Define a test string property for the solution. Enter values for Name, Type and Description as shown in Figure 8-5 on page 229. Click **OK**.

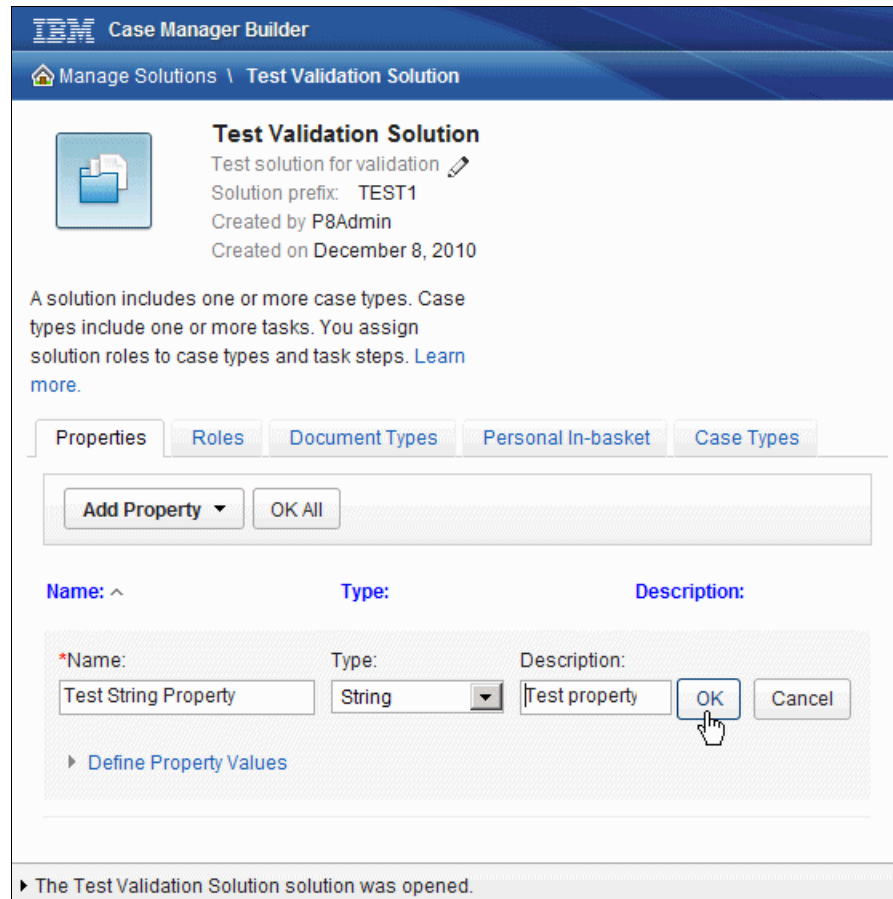


Figure 8-5 Add test string property

6. Select the Roles tab. Enter values for the role Name and Description as shown in Figure 8-6 on page 230. Enter values for the In-basket name and Description. Click the **OK All** button to apply the edits.

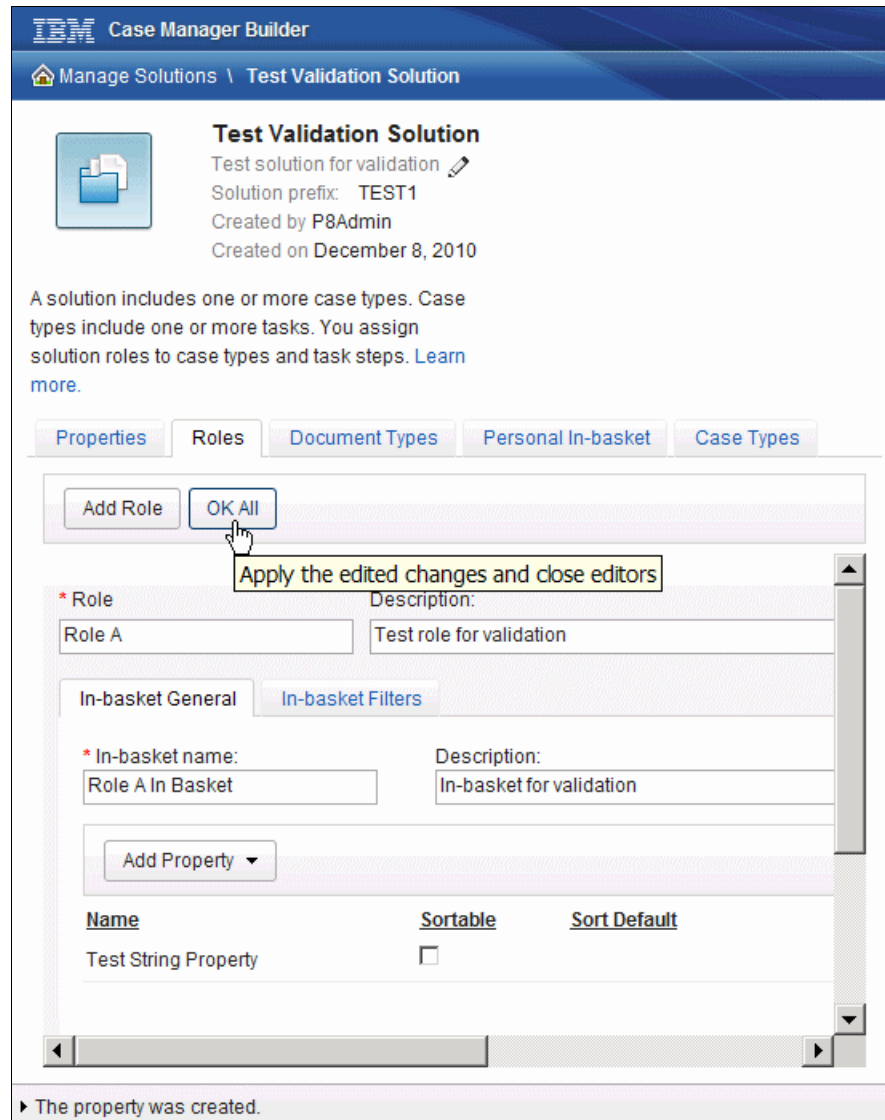


Figure 8-6 Add a role to the solution

7. Select the Case Types tab. Click **Add Case Type** as shown in Figure 8-7 on page 231.

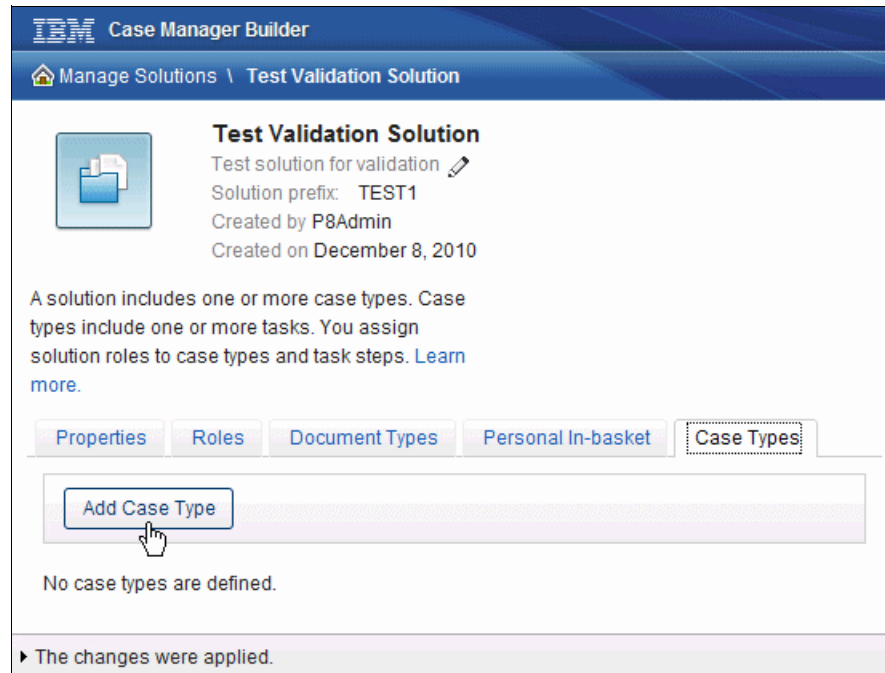
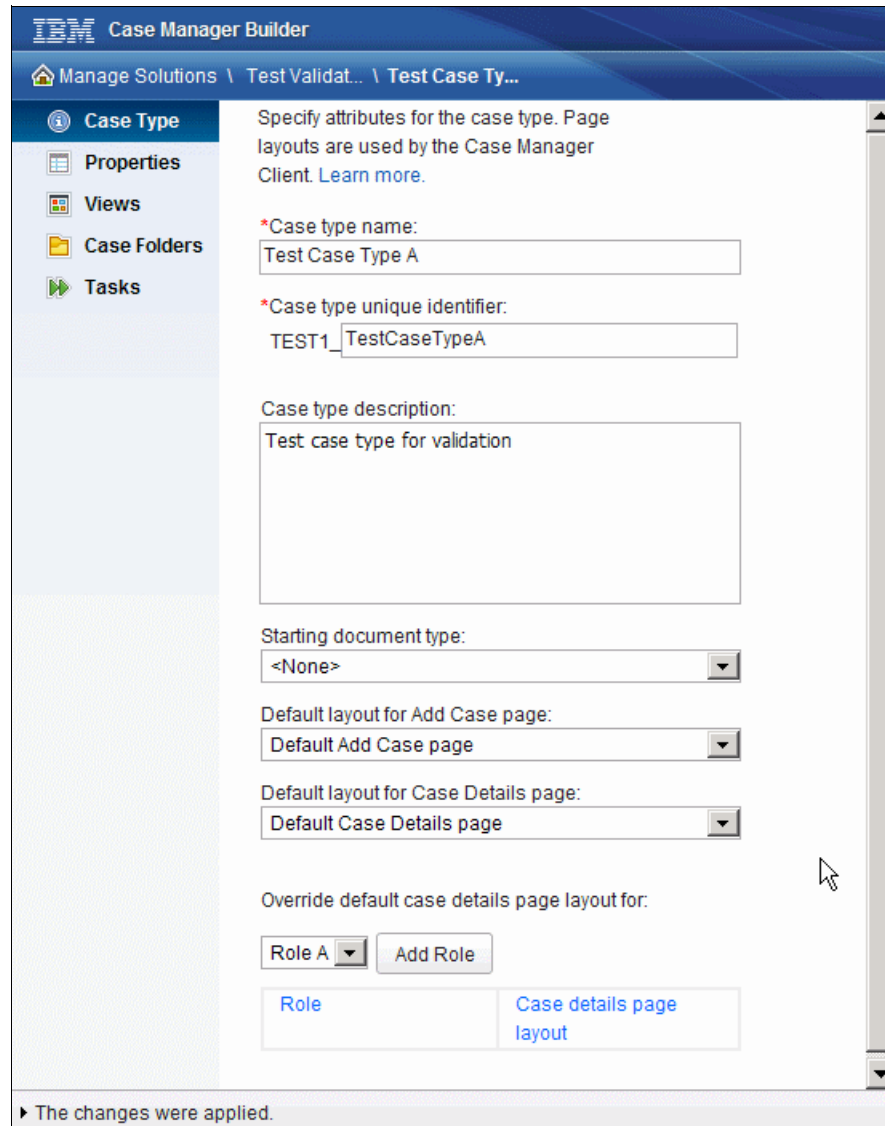


Figure 8-7 Add new case type

8. Select **Case Type** in the left pane and enter a value for the Case type name. The Case type unique identifier field is automatically generated. Enter a value for the Case type description field. Accept default values for all other fields as shown in Figure 8-8 on page 232.



IBM Case Manager Builder

Manage Solutions \ Test Validat... \ Test Case Ty...

Case Type Specify attributes for the case type. Page layouts are used by the Case Manager Client. [Learn more.](#)

Properties

Views

Case Folders

Tasks

*Case type name:
Test Case Type A

*Case type unique identifier:
TEST1_TestCaseTypeA

Case type description:
Test case type for validation

Starting document type:
<None>

Default layout for Add Case page:
Default Add Case page

Default layout for Case Details page:
Default Case Details page

Override default case details page layout for:

Role A Add Role

Role Case details page layout

► The changes were applied.

Figure 8-8 Enter Case Type properties

9. Select **Properties** in the left pane. Click **Add Property** → **Existing** and select the property you created earlier. Enter a Default Value for the property, such as Test work item, as shown in Figure 8-9 on page 233. Click the **OK All** button to apply your edits.

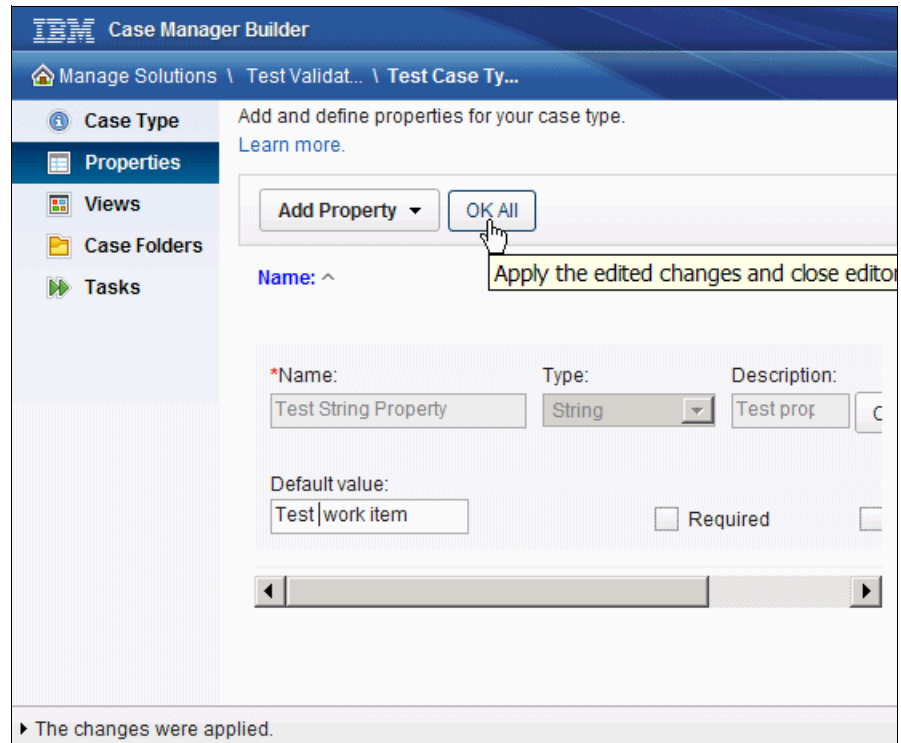


Figure 8-9 Add a property to the case type

10. From the left pane, select **Views**. Select the **Case Summary** tab as shown in Figure 8-10 on page 234.

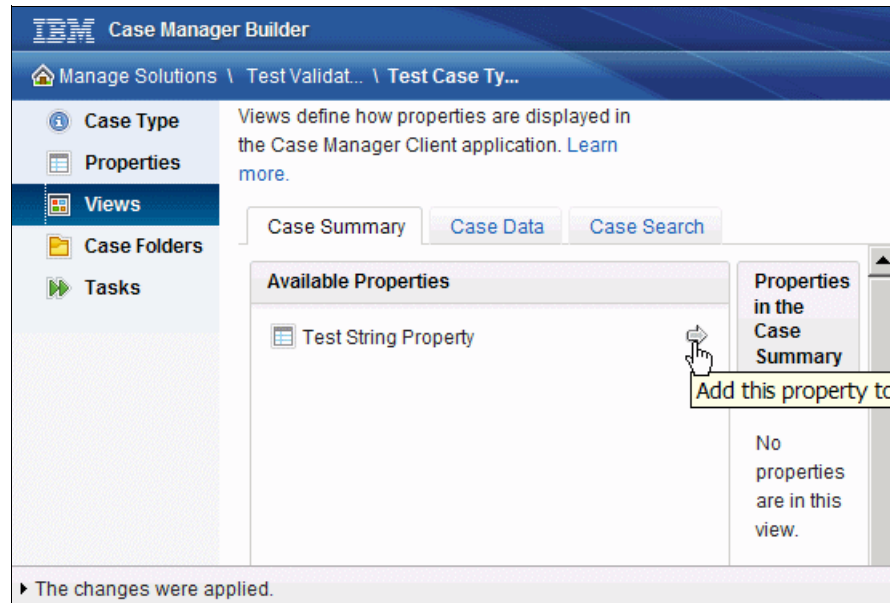


Figure 8-10 Define Case Summary view

11. Click the arrow next to a property name, such as Test String Property, to assign the property to the Case Summary view as shown in Figure 8-11.



Figure 8-11 Properties in the Case Summary view

12. With the Views option still selected in the left pane, select the **Case Data** tab as shown in Figure 8-12 on page 235.

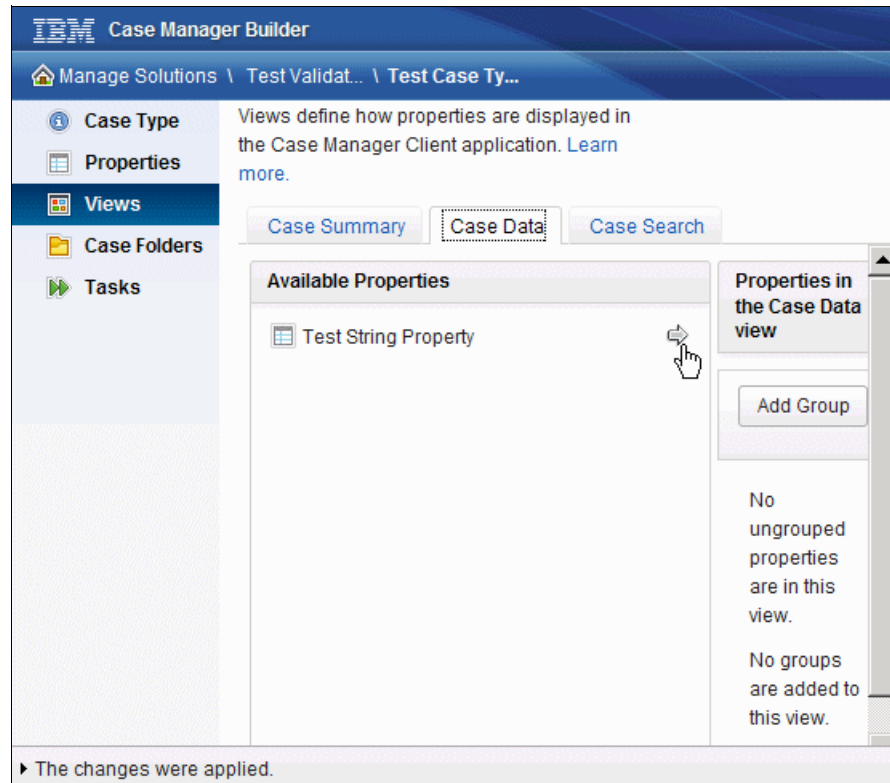


Figure 8-12 Define Case Data view

13. Click the arrow next to a property name, such as Test String Property, to assign the Case Data view as shown in Figure 8-13.

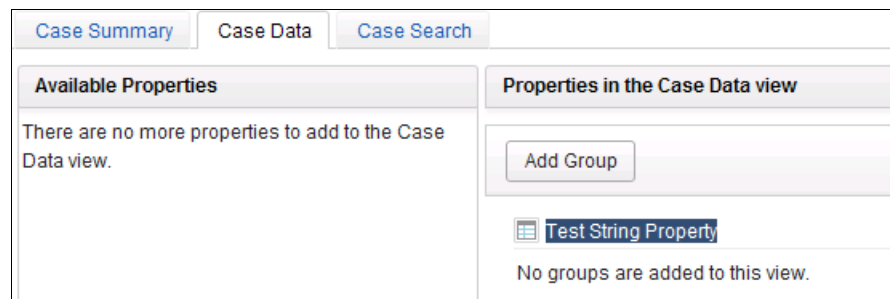


Figure 8-13 Properties in the Case Data view

14. Select **Tasks** in the left pane. Click the **Add Task** button as shown in Figure 8-14 on page 236.

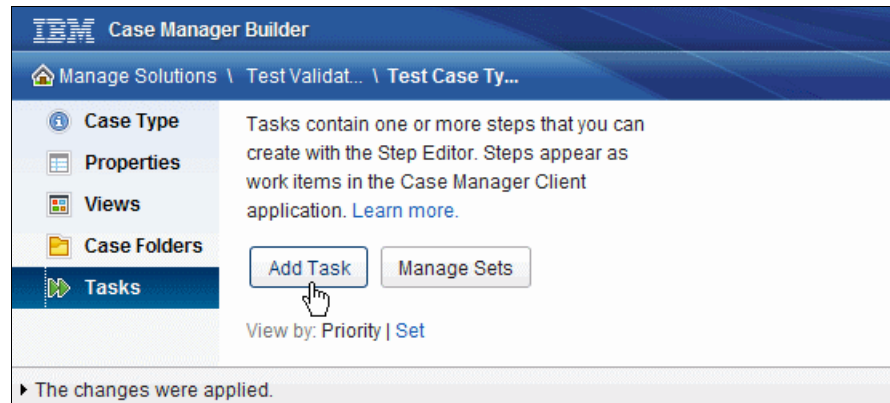


Figure 8-14 Add task

15. Enter values for the task Name and Description. The Unique Identifier value will be generated automatically. For the Task Starts field, accept the default to start **Automatically** as shown in Figure 8-15 on page 237. Click **OK** to apply your edits.

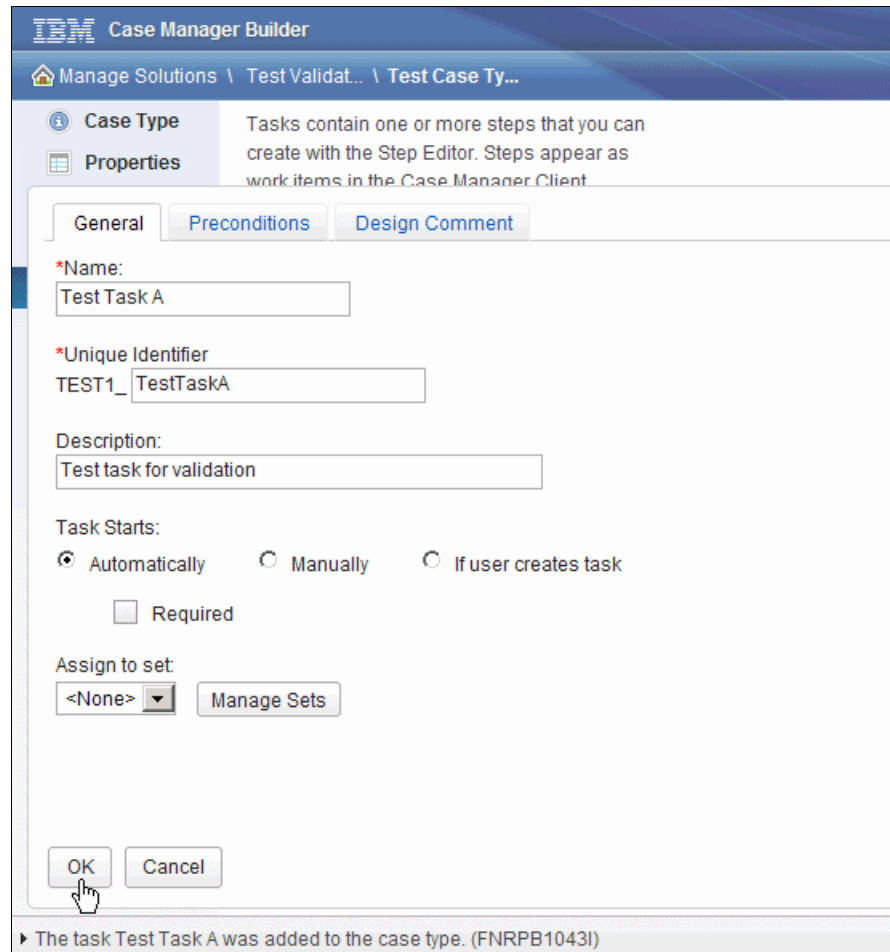


Figure 8-15 Define task general properties

16. The new task is added to the case type as shown in Figure 8-16 on page 238. Leave the case type editor open for the next step.

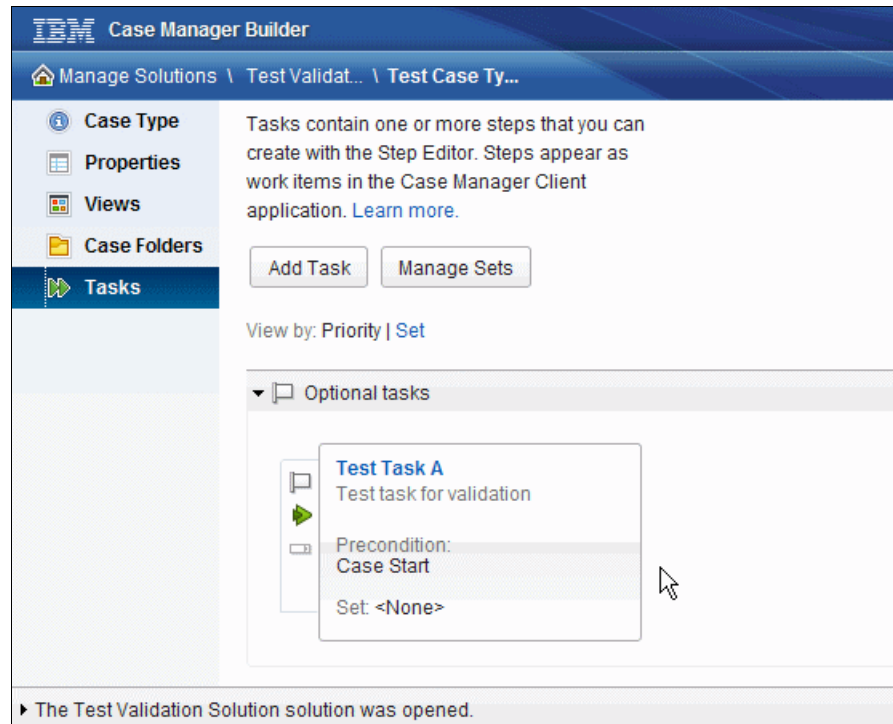


Figure 8-16 New task added

8.3 Adding a workflow diagram using Step Editor

In Case Manager Builder, you use the Step Editor tool to add steps for a task to a workflow diagram. To diagram our test task, do the following:

1. With the **Tasks** option selected in the left pane, select the task you just created. Click the icon to the right of your task to launch the **Step Editor** as shown in Figure 8-17 on page 239.

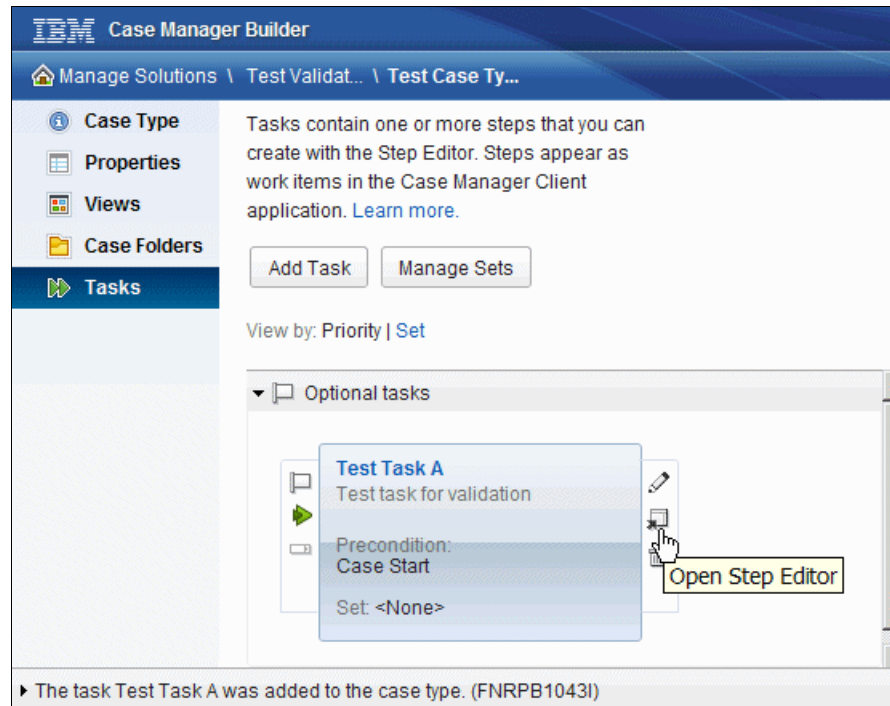


Figure 8-17 Open Step Editor

2. The task is displayed in the Step Editor as shown in Figure 8-18 on page 240. Note that the Step Editor has the following panes:
 - Palette: located in the upper left pane, the Palette contains icons for objects that can be added to the workflow diagram
 - Properties: located in the lower left pane, Properties allows the user set properties for objects in the workflow diagram
 - Canvas: located in right pane, the Canvas contains the workflow diagram

Note: System messages in the IBM Case Manager Builder application are displayed in the message bar located at the bottom of the window. You can expand and collapse the message window by clicking the small triangular icon located just left of the message.

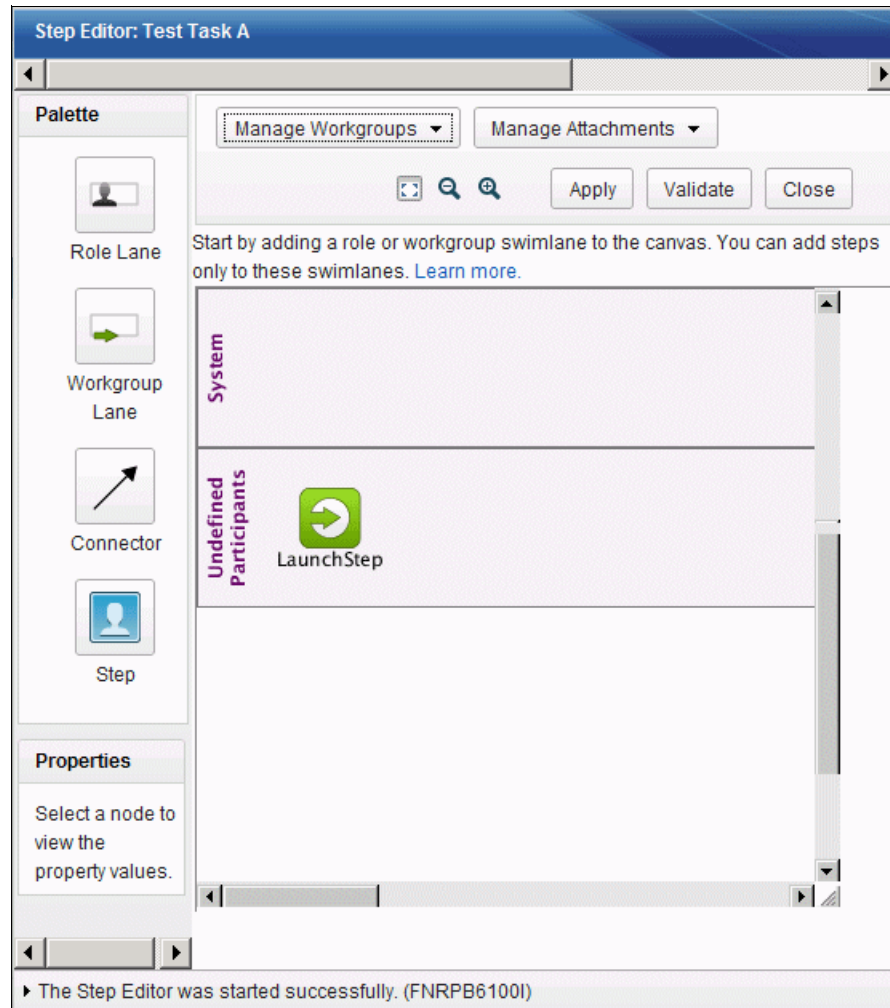


Figure 8-18 Case Manager Builder step editor

3. Add a role lane to the diagram by clicking the **Role Lane** icon in the palette, then dragging and dropping it to an open area on the canvas. The name of the swimlane defaults to the name of the first available role defined for the solution, which in our case is **Role A** as shown in Figure 8-19 on page 241. You can change the name of the role swimlane in the properties pane, but the role must already exist and not already be in use.

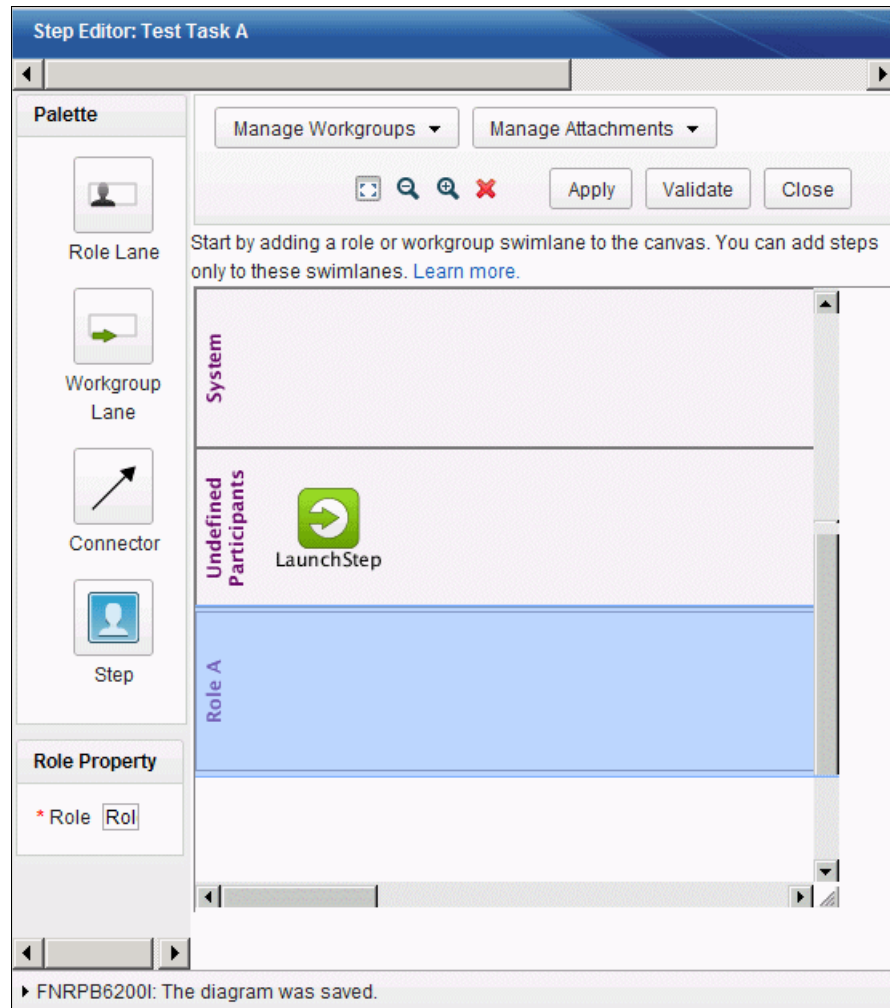


Figure 8-19 Add role swimlane

4. Add a step to the swimlane you just created by clicking the **Step** icon in the palette, then dragging and dropping it to the swimlane as shown in Figure 8-20 on page 242.

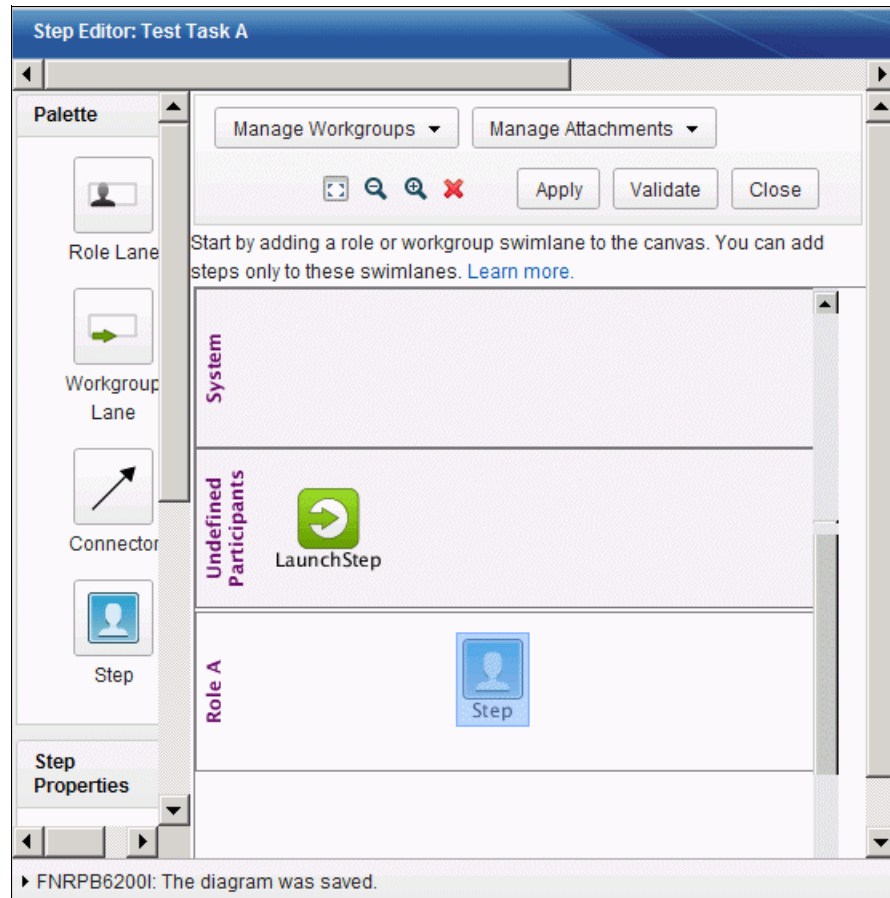
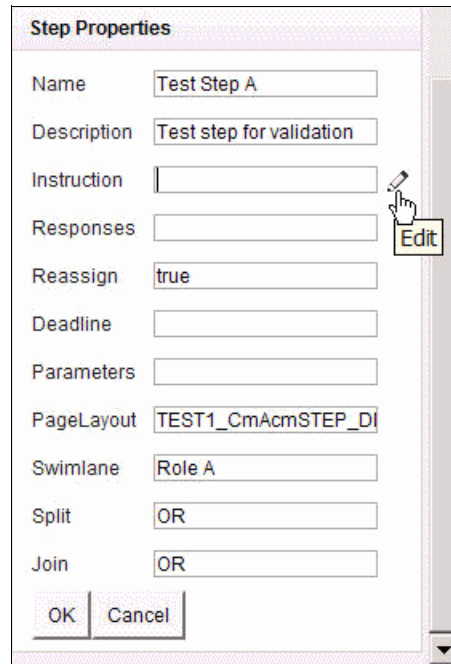


Figure 8-20 Add step to swimlane

5. Click the step you just added, and edit the properties in the Step Properties pane. For the Name and Description properties, you can type directly into the fields. For other properties, you must place your cursor to the right of the field and click the pencil icon as shown in Figure 8-21 on page 243 to enter edit mode.

The image shows a 'Step Properties' dialog box with a light purple border. It contains several text input fields and two buttons at the bottom. The fields are labeled: Name (containing 'Test Step A'), Description (containing 'Test step for validation'), Instruction (empty), Responses (empty), Reassign (containing 'true'), Deadline (empty), Parameters (empty), PageLayout (containing 'TEST1_CmAcMSTEP_DI'), Swimlane (containing 'Role A'), Split (containing 'OR'), and Join (containing 'OR'). An 'Edit' button with a pencil icon is positioned to the right of the Instruction field. At the bottom left are 'OK' and 'Cancel' buttons.

Step Properties

Name

Description

Instruction

Responses

Reassign

Deadline

Parameters

PageLayout

Swimlane

Split

Join

Figure 8-21 Edit step properties

6. For the Instruction field, enter a value such as Process work item and click **OK**.
7. Edit the Parameters field and select the property you defined for the task as shown in Figure 8-22 on page 244. Click **OK**.

Step Properties

Name

Test Step A

Description

Test step for validation

Instruction

Process work item

Responses

Reassign

true

Deadline

Parameters

PageLayout

TEST1_CmAcMSTEP_DEF/

Swimlane

Role A

Split

OR

Join

OR

OK

Cancel

Case Properties

Workgroups

Attachments

Data fields

Select Property

Case Properties

Read only

Read and write

Test String Property

OK

Cancel

FNRPB6200I: The diagram was saved.

Figure 8-22 Select property to include in parameters list

- The value for the Parameters field is inserted using the proper syntax as shown in Figure 8-23 on page 245. Accept the default values all other properties and click the **OK** button in the property pane.

Step Properties	
Name	Test Step A
Description	Test step for validation
Instruction	Process work item
Responses	
Reassign	true
Deadline	
Parameters	{"CaseProperties_Params":
PageLayout	TEST1_CmAcMSTEP_DEF
Swimlane	Role A
Split	OR
Join	OR
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Figure 8-23 Properties for Test Step A

9. Add a connector from the LaunchStep to the test step as shown in Figure 8-24 on page 246. To add a connector from the **LaunchStep** to **Test Step A** similar to that used in our test workflow diagram, perform the following steps:
 - a. Select the **Connector** icon in the Palette pane.
 - b. Place your cursor over the center of the **LaunchStep** icon.
 - c. Click and hold the left mouse button, then drag and release the button over the center of the **Test Step A** icon.

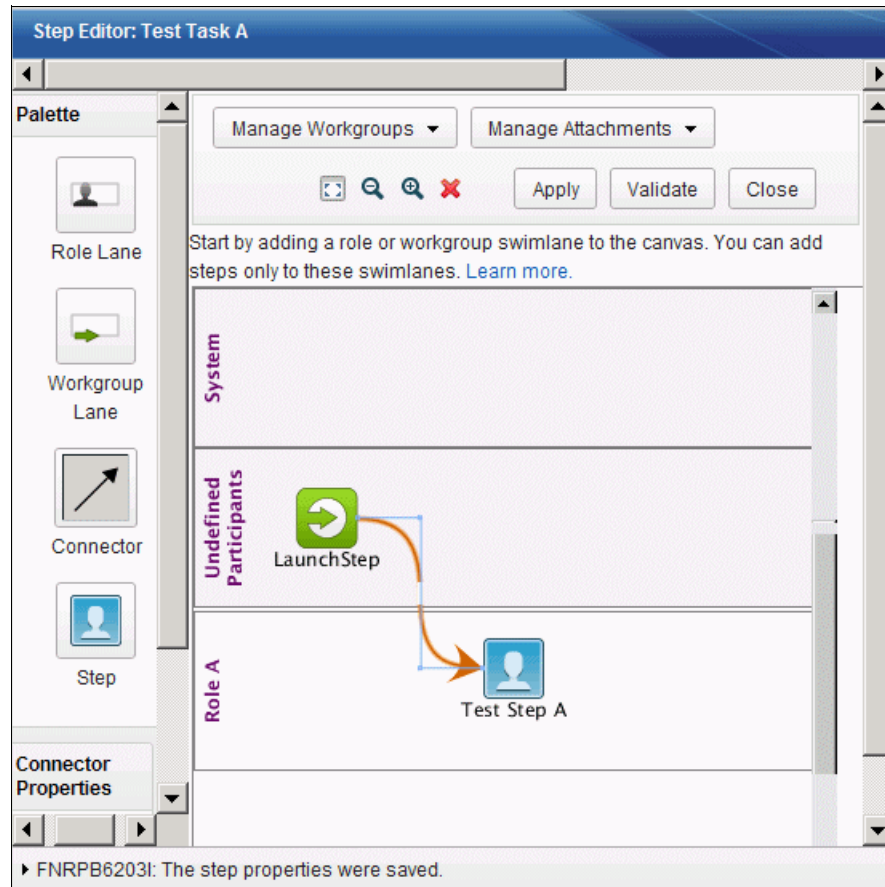


Figure 8-24 Draw connector from LaunchStep to Test Step A

10. Select the connector in the workflow diagram and edit the Connector Properties as shown in Figure 8-25. Click **OK**.

Connector Properties	
Name	<input type="text" value="Path A"/>
Description	<input type="text" value="Connector to step A"/>
Responses	<input type="text"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Figure 8-25 Connector properties

11. Complete the following steps to save and validate the workflow diagram:
 - a. Click the **Apply** button to save the workflow diagram. Verify a message similar to “The diagram was saved” appears in the message bar.
 - b. Click the **Validate** button to validate the workflow diagram. Verify a message similar to “The diagrammed workflow was validated” appears in the message bar.
 - c. Click the **Close** button to exit the Step Editor and return to the Case Type window.
12. Complete the following steps to save and validate the case type:
 - a. Click the **Validate** button to validate the case type. Verify a message similar to “The case type was validated successfully” appears in the message bar.
 - b. Click the **Save** button to save the case type.
 - c. Click the **Close** button to exit the case type editor.
13. Click the **Save and Close** button as shown in Figure 8-26.

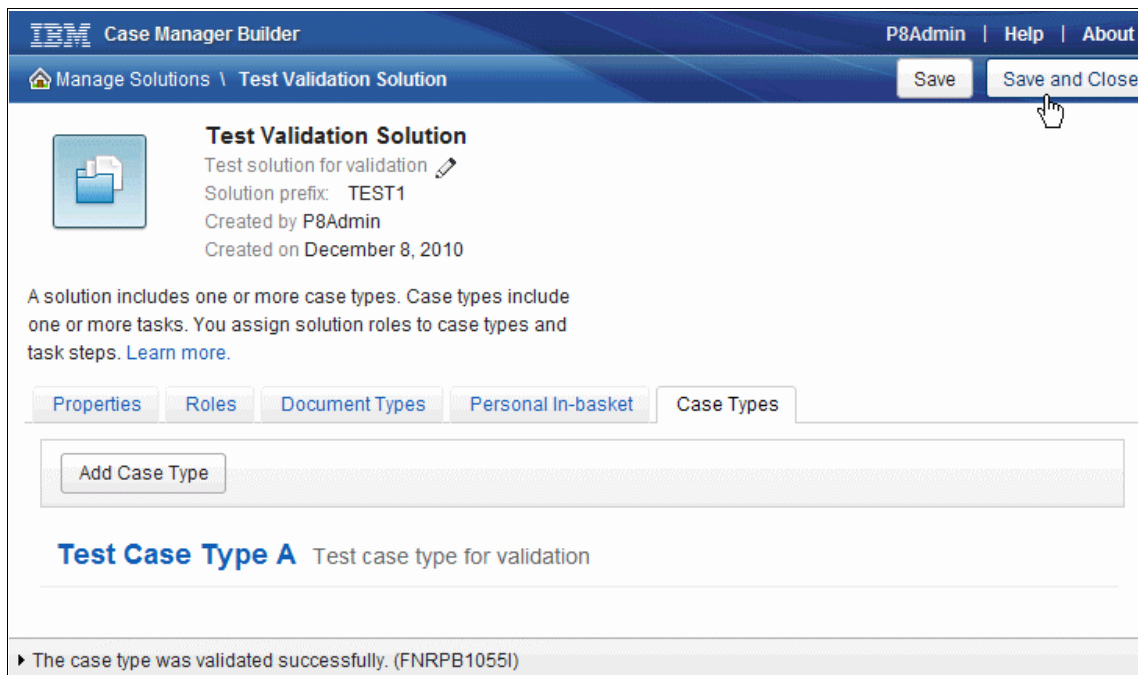


Figure 8-26 Save and close the solution

8.4 Deploying the test solution

In development environments, solutions can be deployed from the IBM Case Manager Builder application. To deploy your test solution, do the following:

1. From the Case Manager Builder solution page, select your test solution. Click **Deploy** as shown in Figure 8-27.

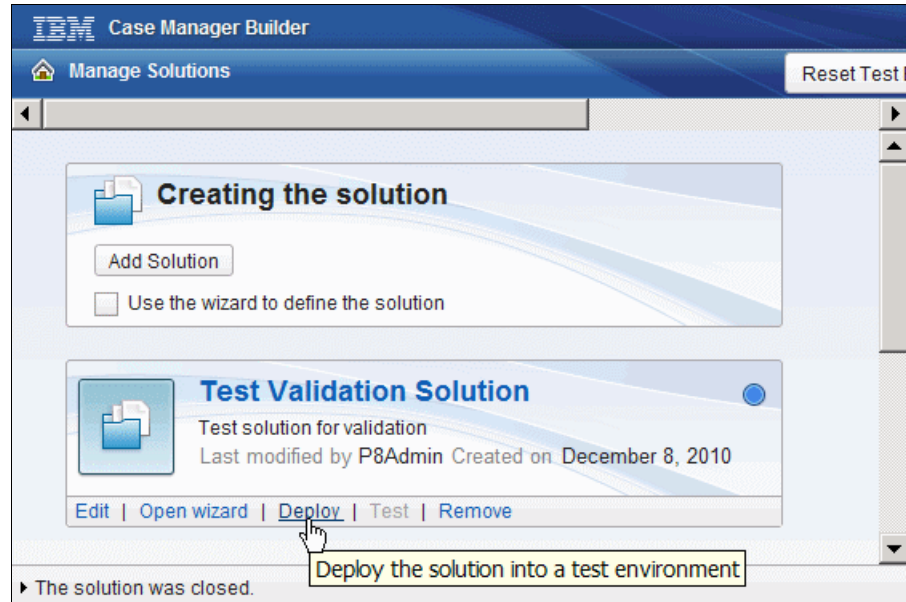


Figure 8-27 Deploy the solution

2. While the solution is deploying, you will see status messages posted in the message bar. Though you might see a message similar to “The deployment status was updated for the solution Validation Solution”, the deployment is not complete until the icon changes to a green check mark as shown in Figure 8-28 on page 249.

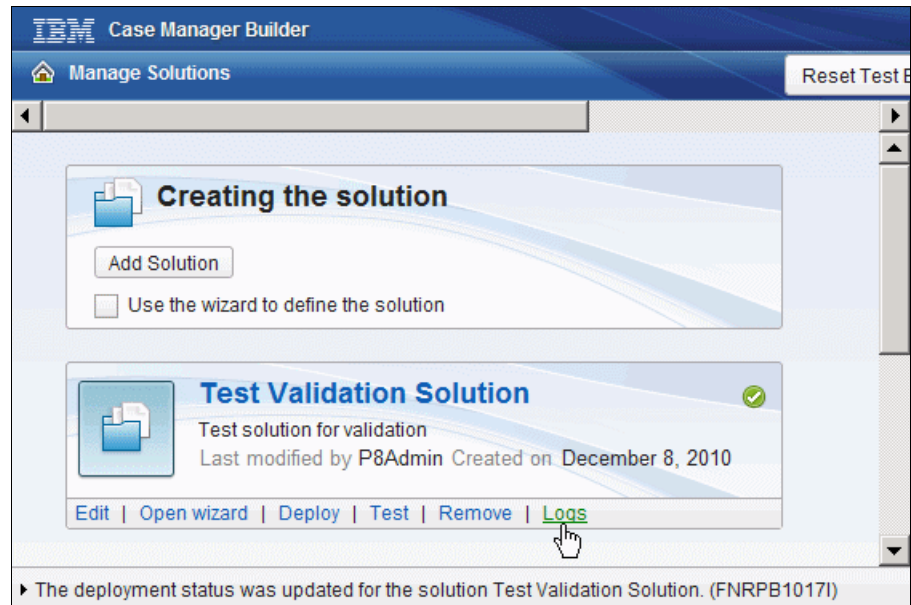


Figure 8-28 Successful solution deployment

3. To view the deployment log, click **Logs** as shown in Figure 8-29 on page 250.

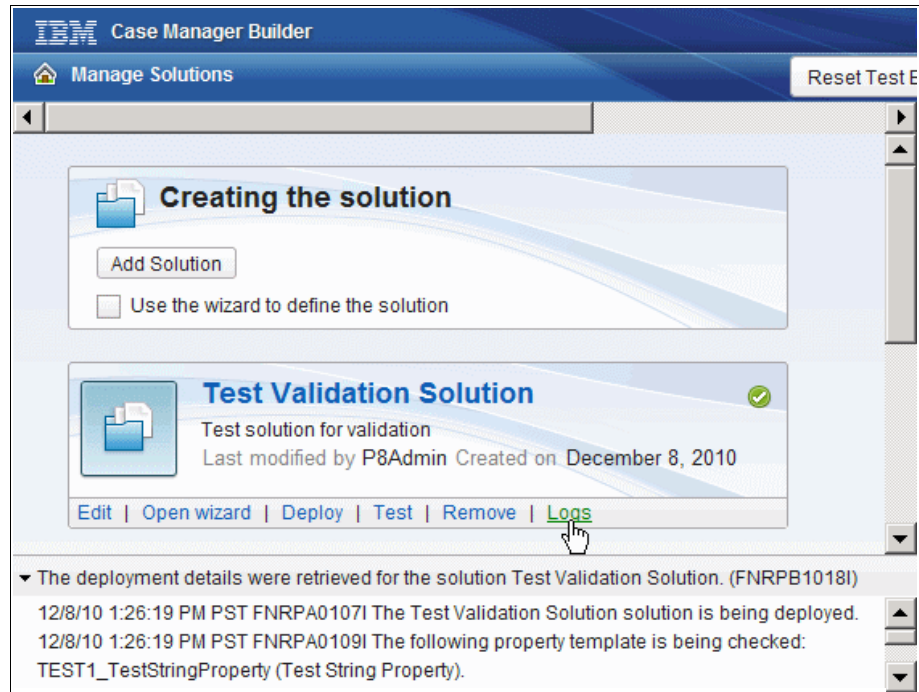


Figure 8-29 View deployment log

Note: If the deployment fails, the status icon will change to a red **X**. You will also see an **Errors** link similar to the **Logs** link. Click the **Errors** link to view any error messages generated by the failed deployment.

8.5 Testing the solution

Do the following steps to test your validation solution:

1. From the Case Manager Builder solution page, select your test solution. Click **Test** as shown in Figure 8-30 on page 251.

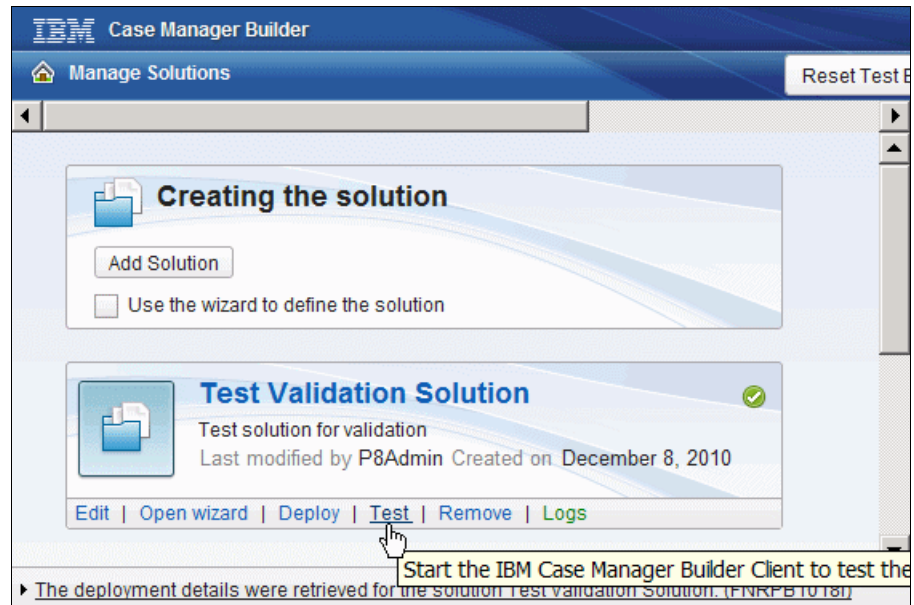


Figure 8-30 Launch IBM Case Manager Builder Client to test the solution

2. Login to the IBM Case Manager Builder Client application using a Business Analyst user account, for example p8Admin, as shown in Figure 8-31 on page 252.

IBM Mashup Center

Welcome to IBM Mashup Center

Unlock data. Remix content. Unleash productivity.

User ID:

Password:

[Help](#)

IBM Mashup Center provides the simplest and fastest way to assemble enterprise, personal, and Internet content into new web applications, unleashing productivity and supporting new insights.

IBM

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Figure 8-31 Login to IBM Case Manager Builder Client (IBM Mashup Center)

3. From the Work tab, click **Manage Roles** as shown in Figure 8-32 on page 253.

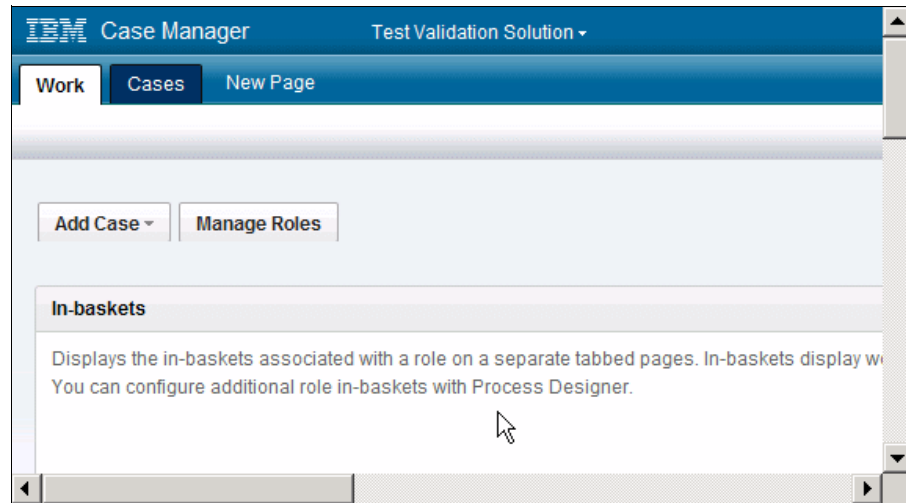


Figure 8-32 Manage Roles

4. Select your role and click the **Add Members** button. Select the users and groups you want to add to the role as shown in Figure 8-33 on page 254. Click **OK**.

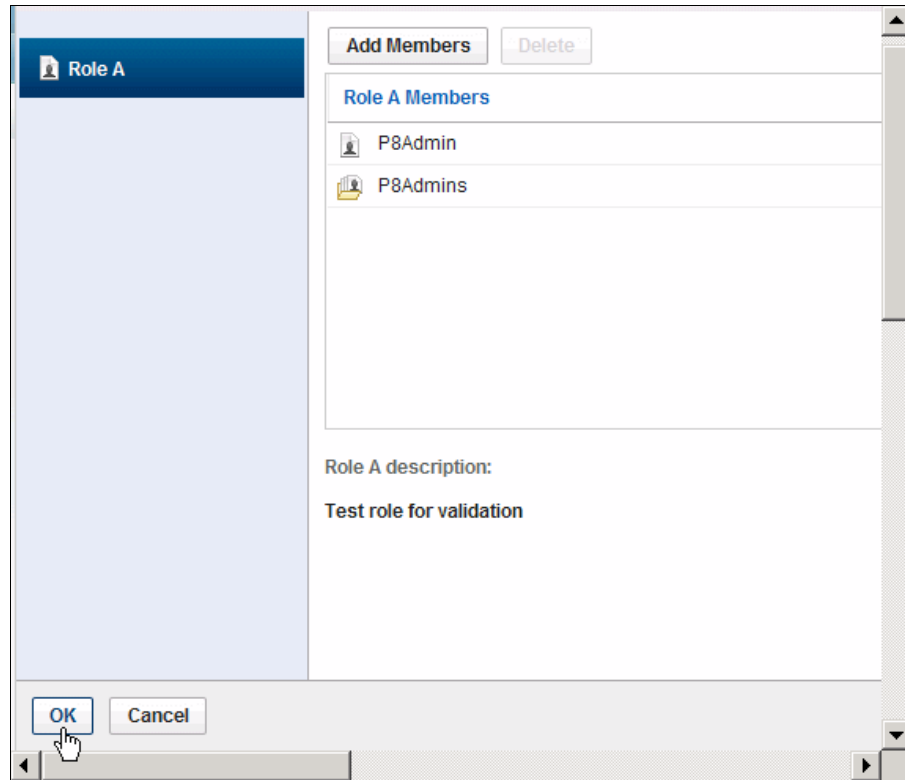


Figure 8-33 Add users and groups to role

5. To activate role membership, you must log out and log back into the IBM Case Manager Client application. The **Log out** link is located in the upper right hand corner of the window as shown in Figure 8-34.

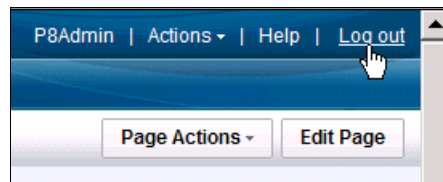


Figure 8-34 Log out of IBM Case Manager Client

6. Log back into the IBM Case Manager Client application. From the Work tab, click **Add Case**. Select the test case type you created for your solution as shown in Figure 8-35 on page 255.

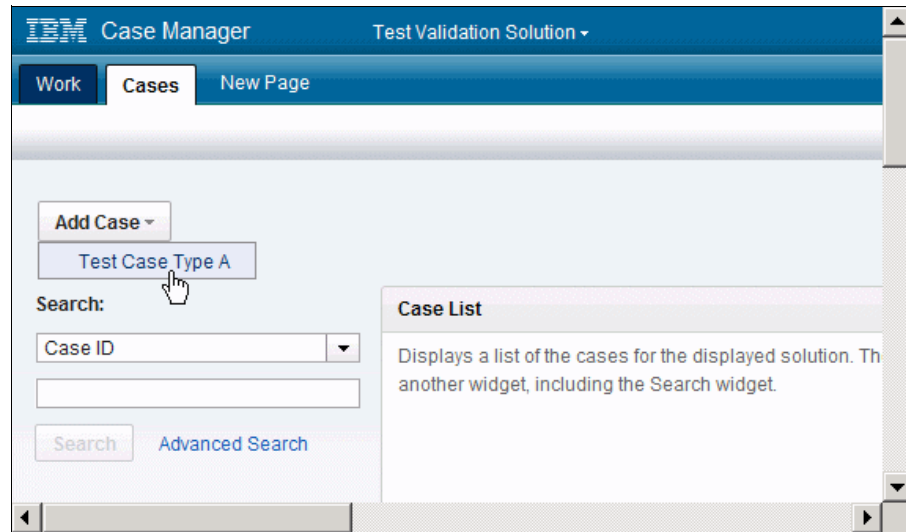


Figure 8-35 Select case type

7. From the Add Case tab, click the **Add** button to add a new case as shown in Figure 8-36.

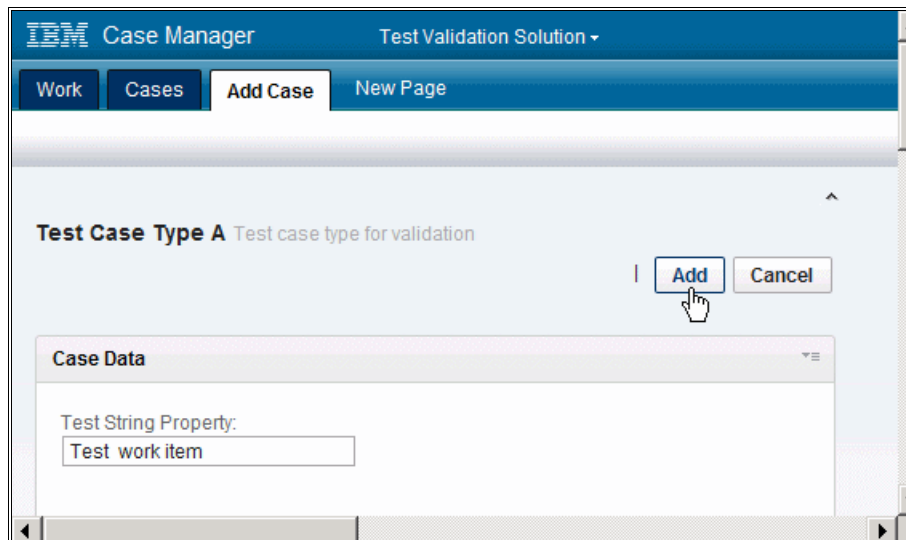


Figure 8-36 Add new case

8. Select the Cases tab. Search for the case you just added by date as shown in Figure 8-37 on page 256.

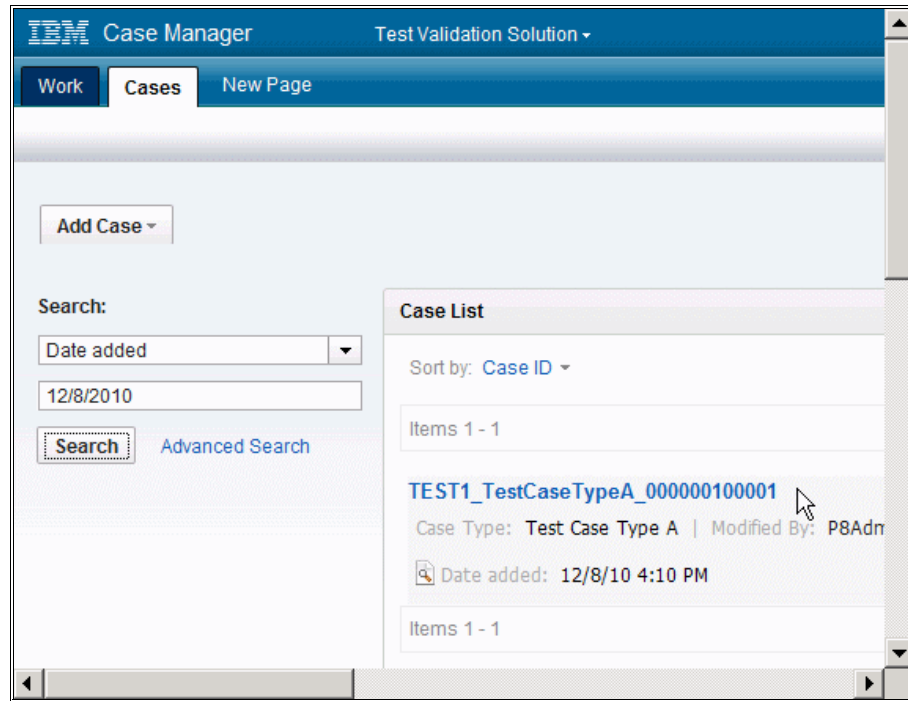


Figure 8-37 Search for the case

9. Select the Work tab. Note that the case you just added does not appear in the In-basket. You must refresh your browser display to see the new items. After you have refreshed, click the work item as shown in Figure 8-38 on page 257.

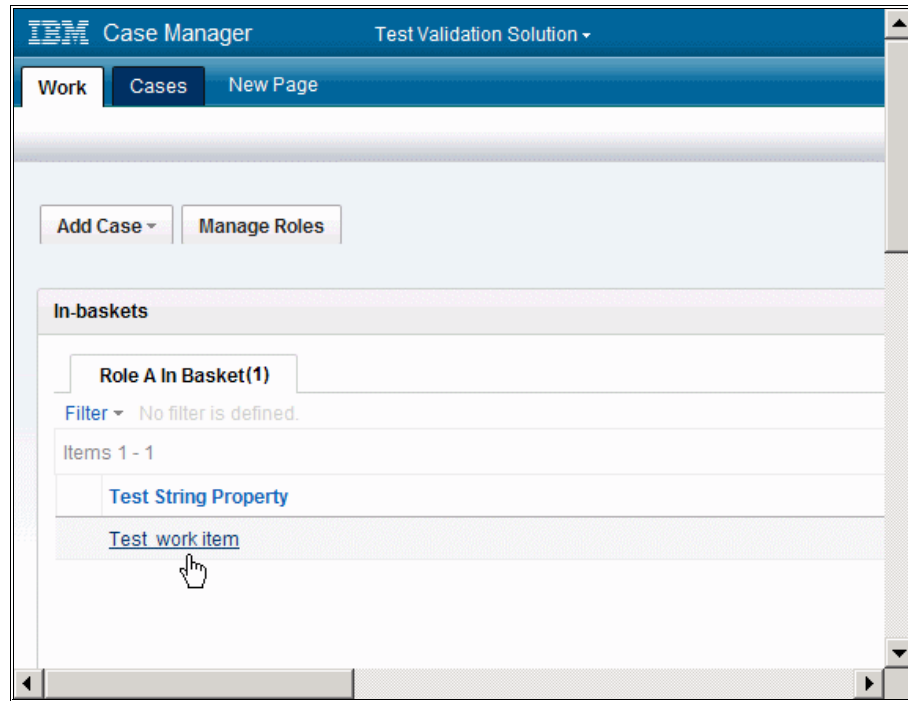


Figure 8-38 Launch work item

10. The selected case is opened. From the Work Details tab, you can view instructions by clicking the **View Instructions** link as shown in Figure 8-39 on page 258.

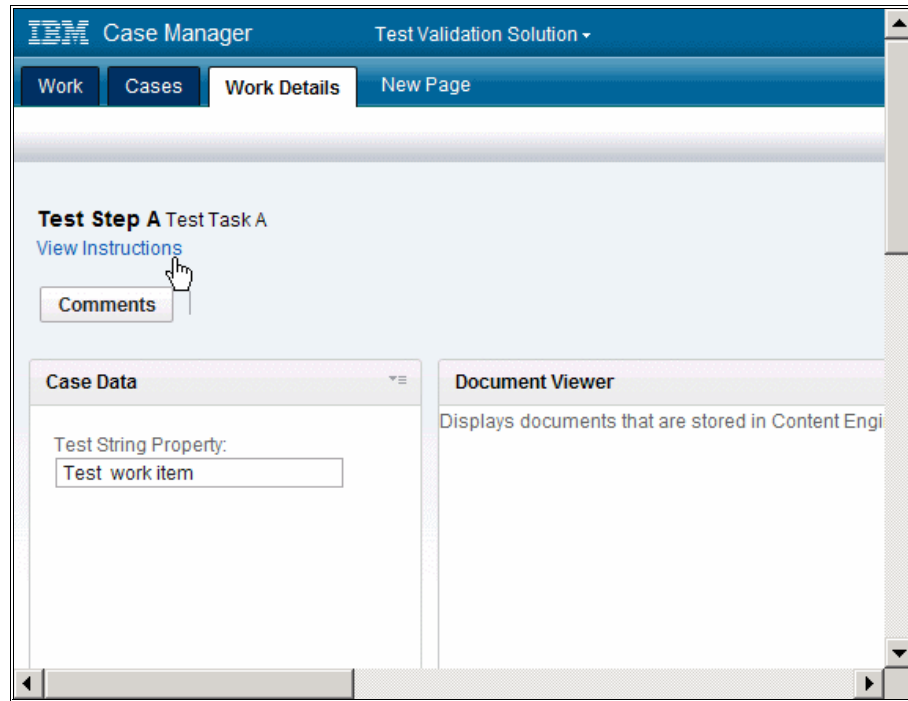


Figure 8-39 View instructions from Work Details window

11. With the Work Details tab still selected, view the Case Information in the right hand pane. Click the **Complete** button as shown in Figure 8-40 on page 259 to complete the step.

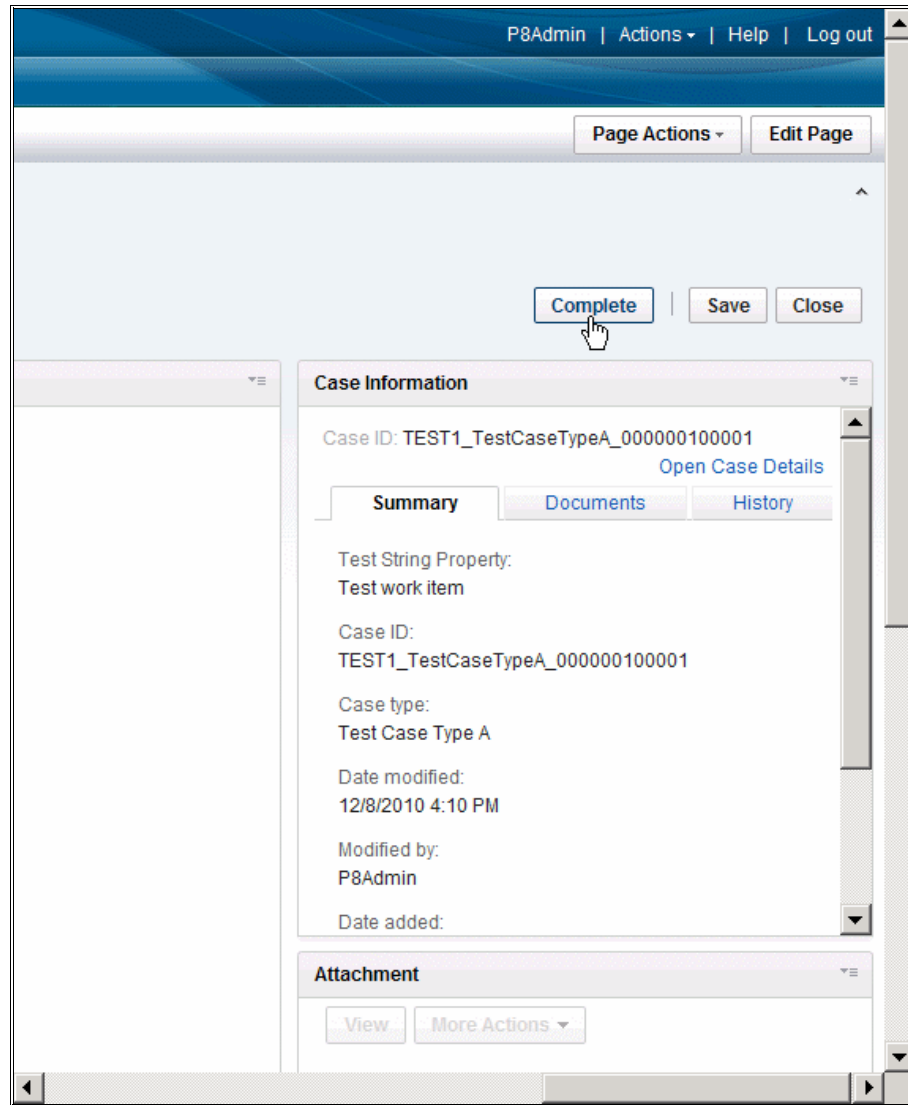


Figure 8-40 Complete the work item

12. Select the Work tab. Note that the work item no longer appears in the role in-basket as shown in Figure 8-41 on page 260.

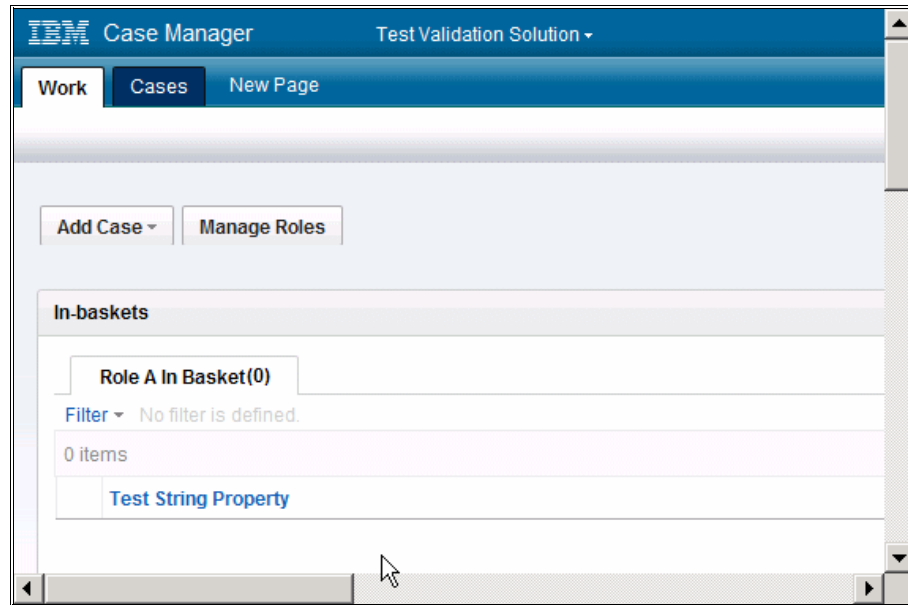


Figure 8-41 Work item complete



Configuring Case Manager production system

This chapter describes the steps required to configure a Case Manager production system.

This chapter covers the following topics:

- ▶ Preparation
- ▶ Installing required software
- ▶ Configuring Workplace XT
- ▶ Configuring Case Manager Client
- ▶ Configuring a production case deployment profile
- ▶ Deploying a solution into production environment

Attention: This chapter describes only a portion of the steps required to set up a complete Case Manager environment. We strongly suggest reading (and following the exercises provided within) the following chapters in the given order to complete and understand the overall set up process:

1. Chapter 6, “Set up overview and installation” on page 123
2. Chapter 7, “Configuring Case Manager development system” on page 173
3. Chapter 8, “Validating Case Manager development system” on page 223
4. Chapter 9, “Configuring Case Manager production system” on page 261

9.1 Preparation

A production deployment of IBM Case Manager requires a production P8 domain separate from the P8 domain used by the development environment. Refer to the guidelines outlined in 6.2, “Preparing IBM FileNet P8 Platform for Case Manager” on page 127 to configure the production P8 domain for Case Manager.

9.2 Installing required software

On your production environment, complete the following installation tasks:

- ▶ Install and configure IBM Mashup Center on the production Case Manager server. Refer to the guidelines and procedures outlined in 6.3, “Installing IBM Mashup Center” on page 133.
- ▶ Install IBM FileNet Workplace XT on the production Case Manager server. Refer to the guidelines and procedures outlined in 6.4, “Installing Workplace XT for Case Manager” on page 149.
- ▶ Install IBM Case Manager on the production Case Manager server. Refer to the guidelines and procedures outlined in 6.5, “Installing Case Manager” on page 152.
- ▶ Install the Content Engine Client and Process Engine Client files on the production Case Manager server. Refer to the guidelines and procedures outlined in 6.6, “Installing FileNet P8 client files” on page 159.

9.3 Configuring Workplace XT

Deploy and configure Workplace XT for the production environment on the IBM Mashup Center server. Refer to guidelines and procedures outlined in 7.4, “Configure Workplace XT for the Case Manager environment” on page 197.

Note: A production Case Manager environment does not require a Case Manager Builder deployment. However, you might want to use the IBM Case Manager Administration Client (CMAC) to create a Case Manager Builder configuration profile with the following tasks:

- Configure Login Modules task
- Configure LDAP task
- Import LTPA Key task

When you run these tasks through CMAC, the appropriate configuration settings required for Workplace XT are created on the production application server. This is optional. You can choose to perform these configuration changes manually if desired.

9.4 Configuring Case Manager Client

To configure IBM Case Manager Client for a production environment, perform the following tasks:

1. Use the Case Manager Administration Client (CMAC) tool to create a Case Manager Client configuration profile for your production environment. Refer to the guidelines and procedures outlined in 7.5, “Configure Case Manager Client” on page 202.
2. Configure and run the Deploy Case Manager Client task for your production environment. Refer to 7.5.1, “Deploy Case Manager Client task” on page 207 for guidelines on running this task.
3. If you are deploying a highly available Case Manager Client application, you must change the deployment scope using the WebSphere Application Server deployment manager. This step must be done immediately before you run the next step to register the client to the IBM Mashup Center server. To change the deployment scope, perform the following steps:
 - a. Log in to the WebSphere administration console on the deployment manager as the administrator.
 - b. Click **Applications** → **Enterprise Applications** → **Case Widgets** → **Manage Modules** and select the **Case Widgets** application.
 - c. In the Clusters and servers list, select the cluster and web server name. Click **Apply**.
4. Configure and run the Register Client to Mashup Server task for your production environment. Refer to 7.5.2, “Register Client to Mashup Server task” on page 209 for guidelines on running this task.

5. Configure and run the Configure Bootstrap Settings task for your production environment. Refer to 7.5.3, “Configure Bootstrap Settings task” on page 211 for guidelines on running this task.
6. Configure and run the Register IBM Mashup Center Server task for your production environment. Refer to 7.5.4, “Register IBM Mashup Center Server task” on page 214 for guidelines on running this task.

Note: For production systems, you must run the Register IBM Mashup Center Server task for each connection definition defined in the production environment.

9.5 Configuring a production case deployment profile

To deploy a solution in a production environment, you must create a case deployment profile. To create a Case deployment profile, perform the following steps:

1. From Case Manager Administration Client (CMAC), click **File** → **Create Profile** on the menu bar.
2. For **Profile type**, select **Case deployment profile**. Enter a name for the profile and select the location where you want to have the new profile directory created. See example profile information in Figure 9-1 on page 265. Click **Next** to continue.

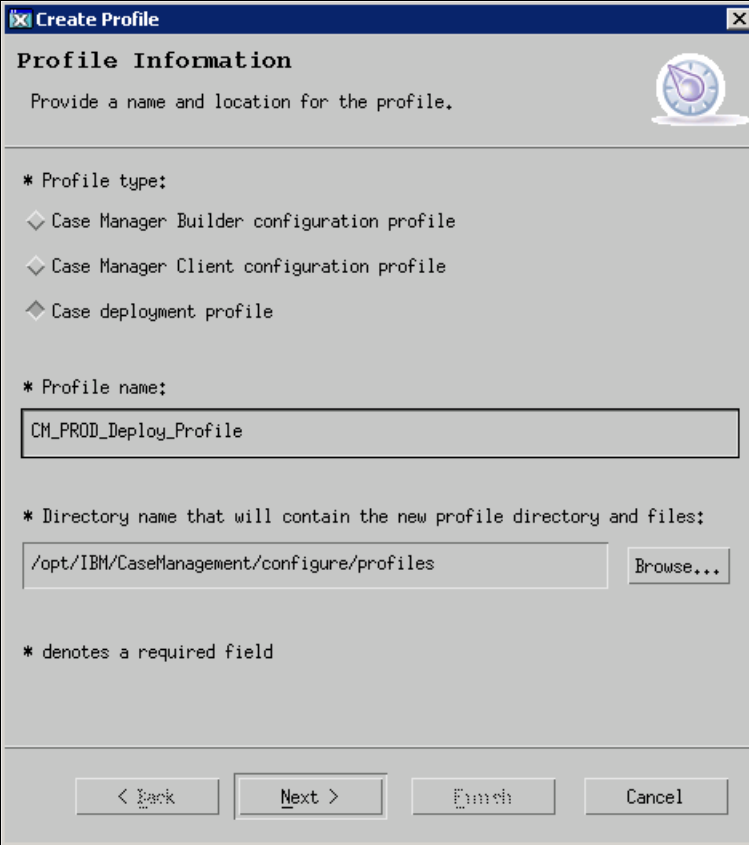
The image shows a 'Create Profile' dialog box with a blue title bar. The main area is titled 'Profile Information' and contains instructions to 'Provide a name and location for the profile.' There is a small icon of a globe with a blue arrow. Below this, there are three radio button options for 'Profile type': 'Case Manager Builder configuration profile', 'Case Manager Client configuration profile', and 'Case deployment profile'. The 'Case deployment profile' is selected. Below the radio buttons, there is a text field for 'Profile name:' containing the text 'CM_PROD_Deploy_Profile'. Below that, there is a text field for 'Directory name that will contain the new profile directory and files:' containing the text '/opt/IBM/CaseManagement/configure/profiles'. To the right of this text field is a 'Browse...' button. At the bottom of the dialog, there are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'. A note at the bottom left states '* denotes a required field'.

Figure 9-1 Create a case deployment profile for production

3. The Case deployment profile requires information about the production Content Engine deployment. The values configured for our test production environment are shown in Figure 9-2 on page 266.

Edit Case Deployment Profile Properties

Set properties for Case deployment profile

Provide values for the required profile properties.

* Content Engine Server WSI URL:

* Content Engine domain user name:

* Content Engine domain user password: Confirm:

* Case management design object store name:

* Network shared directory:

* denotes a required field

Figure 9-2 Sample Case deployment profile properties

4. Select the tasks to include in your Case deployment profile. For our example, we selected all the tasks in the list as shown in Figure 9-3.

Create Profile

Select the tasks that you want to include in this profile

The profile consists of individual configuration tasks that provide information about your IBM Case Manager environment.

- ☒ Generate Localization Resources
- ☒ Export Pages
- ☒ Create Case Manager API WAR file
- ☒ Deploy Case Manager API
- ☒ Create Connection Definition
- ☒ Deploy Solution

< Back Next > Finish Cancel

Figure 9-3 Tasks for case deployment profile

5. The sample production deployment profile is shown in Figure 9-4 on page 267.

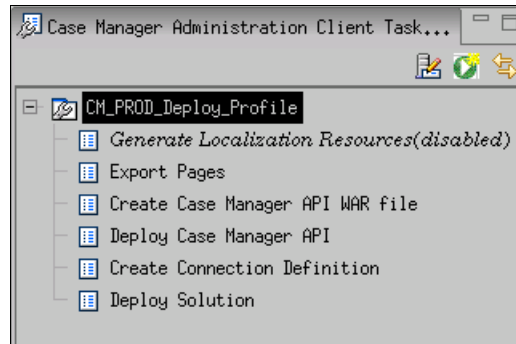


Figure 9-4 Sample production deployment profile

The Generate Localization Resources task is optional and is used to enable multicultural support for the text in solution definitions.

The Export Pages task and Deploy Solution task, used to deploy a specific solution to the production environment, are described later in this chapter in 9.6, “Deploying a solution into production environment” on page 272.

9.5.1 Create Case Manager API WAR file for production

The Create Case Manager API WAR file task generates the WAR file used for deploying the Case Manager API on the application server on your production environment.

To configure the production environment, perform the following steps:

1. Open the Create Case Manager API WAR file task for editing. To edit a profile task, right-click the task in the left pane, and select **Edit Selected Task** from the context menu. You can also double-click a task to open it for editing.
2. Enter the values appropriate for configuring your production environment. A sample Create Case Manager API WAR file task is shown in Figure 9-5 on page 268. Enter the URL for your environment, then save and execute the Create Case Manager API WAR file task.

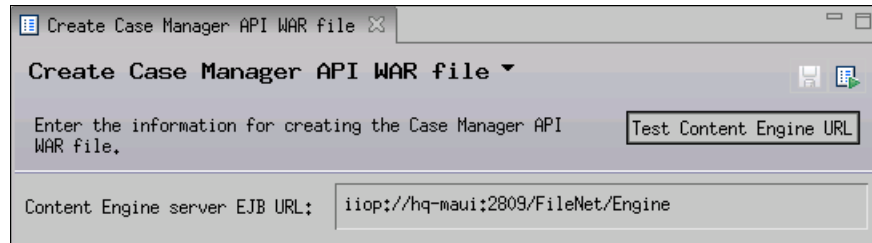


Figure 9-5 Sample Create Case Manager API WAR file task

9.5.2 Deploy Case Manager API for production

The Deploy Case Manager API task deploys the Case Manager API WAR file to the application server. You must run the Create Case Manager API WAR file task prior to running this task.

To deploy Case Manager API for production environment, perform the following steps:

1. Open the Deploy Case Manager API task for editing. To edit a profile task, right-click the task in the left pane, and select **Edit Selected Task** from the context menu. You can also double-click a task to open it for editing.
2. Enter the values appropriate for configuring your production environment. A sample Deploy Case Manager API task is shown in Figure 9-6 on page 269. After you have completed your entries, save and execute the Deploy Case Manager API task.

Deploy Case Manager API

Deploy Case Manager API

Enter the information for deploying the IBM Case Manager API WAR file to the application server. Prerequisite: You must run the Create Case Manager API WAR file task before you run this task.

Test Connection

Application server installation directory:
Browse...

Application server profile directory:
Browse...

Application server administrator user name:

Application server administrator password:
Confirm:

Application server host:

Application server SOAP port:

Application server cell:

Deployment type:

Case Manager API WAR file path:
Browse...

Case Manager API application name:

Application server node:

Application server name:

Application server virtual host:

Case Manager REST URL:

CMIS URL:

Script:
Browse...

Temporary directory:
Browse...

Figure 9-6 Sample Deploy Case Manager API task

9.5.3 Create Connection Definition for production

The Create Connection Definition task creates a connection definition that associates a Process Engine connection point to an IBM Mashup Center server for deploying a case management solution to an object store. This task also installs the Case Manager AddOns for the object store and creates the required events and subscriptions in Content Engine. You must run this task for each target object store you intend to use for deploying case management solutions. To run the Create Connection Definition task:

1. Open the Create Connection Definition task for editing. To edit a profile task, right-click the task in the left pane, and select **Edit Selected Task** from the context menu. You can also double-click a task to open it for editing.
2. Enter the values appropriate for configuring your production environment. A sample Create Connection Definition task is shown in Figure 9-7. After you have completed your entries, save and execute the Create Connection Definition task.

Create Connection Definition

Enter the information for creating the connection definition. The connection definition associates a Process Engine connection point to an IBM Mashup Center server for deploying a case management solution to an object store. This task also installs the Case Manager AddOns for the object store and creates the required events and subscriptions in Content Engine.

Connection definition name:	prod_env_connection_definition
Connection definition description:	Connection definition for the PROD environment
Process Engine connection point:	CM_Region1_CP (CMTOS)
IBM Mashup Center server URL:	http://cm-sseaix01-05:9080/mum/enabler

Figure 9-7 Sample Create Connection Definition task

Note: You must run the Register IBM Mashup Center Server task from the Case Manager Client configuration profile immediately after creating each new connection definition in a production environment.

9.5.4 Create retrieval key for the production target object stores

For production environments, you must create a two-part key for each production target object store that uses a Case Manager solution. This database retrieval key is required for retrieving the case history in the Event table. The two-part key uses the following format:

```
<case_folder_column, audit_sequence DESCENDING>
```

where *case_folder_column* is the name of the database column that contains the CmAcCaseFolder property. Note that because the database column name might not be the same in different target object stores, use the globally unique identifier (GUID). The key must be unique. Follow these steps to use FileNet Enterprise Manager to determine the GUID for the CmAcCaseFolder property:

1. Expand your target object store, and click **Property Templates** → **Case Folder** as shown in Figure 9-8.

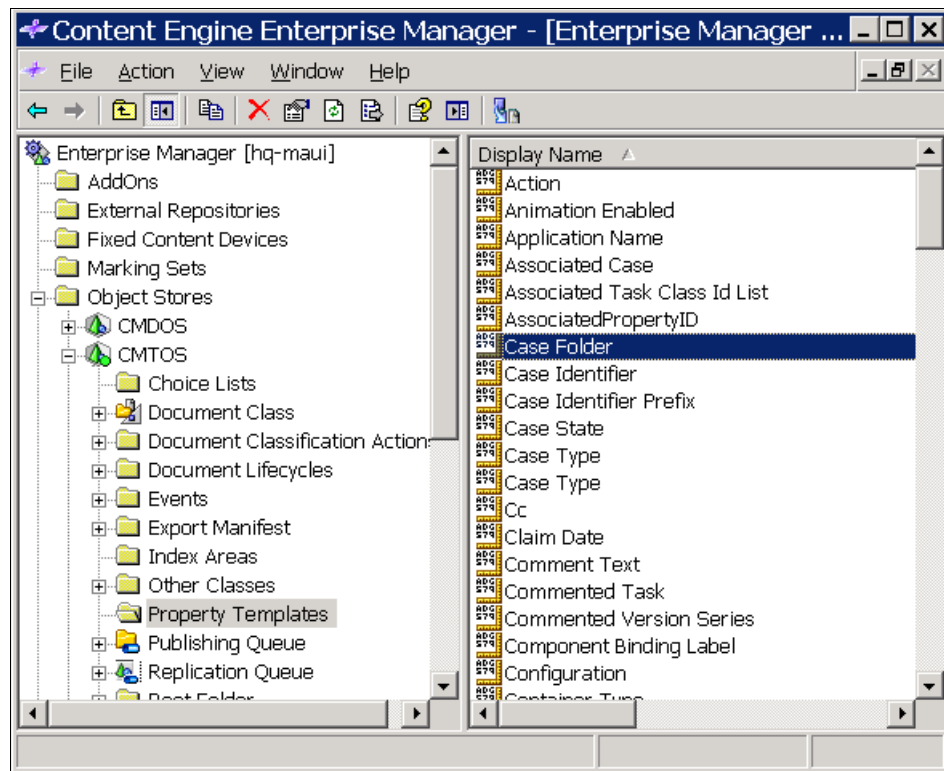


Figure 9-8 Case folder

2. Right-click **Case Folder** and select **Properties**. The GUID is the value of the Primary ID field on the General tab.

9.6 Deploying a solution into production environment

This section describes how to deploy a solution from your development environment into your production environment. It assumes that you have already created, deployed, and tested the solution using the IBM Case Manager Builder application in your development environment.

9.6.1 Prepare the solution for deployment

When you are ready to deploy the solution into your production environment, you must export the default pages and custom pages from the IBM Mashup Center development environment to the case management design object store.

Note: The Export Pages task must be run on the development environment. Therefore, you must create a Case deployment profile on your development Case Manager server to run this task.

Perform the following steps in your development environment to export your solution pages:

1. Using the Case Manager Administration Client (CMAC) tool, open your Case deployment profile.
2. Open the Export Pages task for editing. To edit a profile task, right-click the task in the left pane and select **Edit Selected Task**. You can also double-click a task to open it for editing.
3. The Export Pages task is used for exporting custom pages from the development environment mashup server to the case management design object store. A sample Export Pages task is shown in Figure 9-9 on page 273. After you have completed your entries, save and execute the Export Pages task.

Figure 9-9 Sample Export Pages task

9.6.2 Copy solution package from development to production

The FileNet Deployment Manager utility is used to copy the case management solution package from the development environment domain to the production environment domain.

Note: See Deploying IBM FileNet P8 applications at the following URL for more information about using the FileNet Deployment Manager:

http://publib.boulder.ibm.com/infocenter/p8docs/v5r0m0/index.jsp?topic=/com.ibm.p8.common.deploy.doc/overview_intro.htm

In particular, you might want to review the following sections:

- **Deploying IBM FileNet P8 applications → Deployment overview**
- **Deploying IBM FileNet P8 applications → FileNet P8 assets**
- **Deploying IBM FileNet P8 applications → Prepare data for deployment → How to... → Prepare Content Engine data**
- **Deploying IBM FileNet P8 applications → Deploy FileNet P8 Platform assets → How to... → Deploy Content Engine → Import converted objects**

The solution package consists of the following artifacts located in the solution folder on the case management design object store:

- Solution definition file

- ▶ Process Engine connection definition
- ▶ Task steps (stored as one XPDL file per task)
- ▶ Pages subfolder
- ▶ Default page objects and any custom page objects if you created custom pages in the development environment

See the Copying a solution package to production topic at the following URL for more information about moving your solution to your production environment:

<http://publib.boulder.ibm.com/infocenter/casemgmt/v5r0m0/index.jsp?topic=/com.ibm.casemgmt.installing.doc/acmde001.htm>

9.6.3 Deploy the solution to a production target object store

After you have copied the solution from development to production, perform the following steps to deploy the solution to your production environment:

1. Using the Case Manager Administration Client (CMAC) tool, open your Case deployment profile.
2. Open the Deploy Solution task for editing. To edit a profile task, right-click the task in the left pane, and select **Edit Selected Task** from the context menu. You can also double-click a task to open it for editing.
3. The Deploy Solution task is used to deploy a case management solution to a target object store. A sample Deploy Solution task is shown in Figure 9-10. Click the **Assign Roles** button to assign roles required for your solution. Enter the values appropriate for your environment, then save and execute the Deploy Solution task.

Figure 9-10 Sample Deploy Solution task

9.6.4 Completing the production deployment

After deploying your solution, you can configure a more user friendly case ID for display in the Case Manager Client by using IBM FileNet Enterprise Manager. The steps to do this task are outlined in the Customizing the case unique identifier prefix topic at the following URL:

<http://publib.boulder.ibm.com/infocenter/casemgmt/v5r0m0/index.jsp?topic=/com.ibm.casemgmt.installing.doc/acmcg052.htm>

You must also configure security in the production environment for the objects as noted in Table 9-1.

Table 9-1 Securing your case management environment

Component	Objects
Content Engine	Case management objects
Process Engine	Queues, rosters, and application spaces
Case Manager Client	Spaces and pages

For more information refer to the Configuring security in the IBM Case Manager production environment topic at the following URL:

<http://publib.boulder.ibm.com/infocenter/casemgmt/v5r0m0/index.jsp?topic=/com.ibm.casemgmt.installing.doc/acmcg061.htm>



Part 3

Building and deploying Case Manager solutions

This part covers building and deploying IBM Case Manager solutions. It also includes chapters on modifying tasks with Process Designer (round tripping), and creating and deploying an iWidget.



Building a sample solution

In this chapter, we implement the sample solution described in 2.2.1, “Customer scenario” on page 25. It uses the artifacts (properties, documents, roles, case types and tasks) discovered in Chapter 3, “Designing case management solutions” on page 29 as input to IBM Case Builder.

This chapter covers the following topics:

- ▶ Defining artifacts to be implemented in the sample solution
- ▶ Building the sample solution overview
- ▶ Artifacts to be implemented in the sample solution
- ▶ Create a Credit Card Dispute solution
- ▶ Set up and configure artifacts for the solution
- ▶ Set up tasks
- ▶ Configure workflow diagrams using step editor
- ▶ Save and validate the Credit Card Dispute solution

After building the solution, you need to deploy it in an environment and use it. Make sure you read the following chapters for completing the building of the sample solution:

- ▶ Chapter 11, “Deploying and using the sample solution” on page 339
- ▶ Chapter 12, “Modifying a task with Process Designer” on page 401

10.1 Building the sample solution overview

The sample solution presented in this chapter is intended to show as much IBM Case Manager functionality as possible while maintaining simplicity for easier reading and understanding. The solution demonstrates the following IBM Case Manager functionality:

- ▶ Practice of using smaller, task-based processes
- ▶ Use of automatic, required, and manual tasks
- ▶ Use of mutually exclusive task sets
- ▶ Document-based preconditions
- ▶ Property-based preconditions

Building the sample solution for our Credit Card Dispute solution is summarized in the following steps:

1. Create a Credit Card Dispute solution.
2. Set up and configure artifacts for the solution:
 - Set up properties.
 - Set up roles.
 - Set up document types.
 - Set up personal in-baskets.
 - Set up case type.
3. Set up tasks.
4. Configure workflow diagrams using step editor.
5. Save and validate the Credit Card Dispute solution.

10.2 Artifacts to be implemented in the sample solution

The sample solution presented in this chapter is based on the credit-card-dispute use case described in 2.2.1, “Customer scenario” on page 25. The process used to design a case management solution for the sample credit-card-dispute use case is described in Chapter 3, “Designing case management solutions” on page 29.

Case types

For our credit card dispute solution, we will create a single case type titled Credit Card Dispute. The following sections describe the various tasks, roles, document types, and properties required for the Credit Card Dispute case type.

Tasks

The tasks required for the Credit Card Dispute case type are listed in Table 10-1.

Table 10-1 Credit card dispute solution tasks

Task	Description
Send Confirmation Letter	Starts automatically on case creation to send letter to customer window through third party letter generation software
Manage Dispute	Main dispute handling task
Process Charge Back	Starts when a precondition (property value is set) to refund the credit charge back to the customer's credit card account
Customer Fraud Determination	Manually started task to determine if there is fraud on behalf of the customer
Vendor Fraud Determination	Manually started task to determine if there is fraud on behalf of the vendor

Roles

The roles identified for processing the Credit Card Dispute case type are described in Table 10-2.

Table 10-2 Credit card dispute solution roles

Role	Description
Customer Services	Creates a dispute case and communicates decisions about how to settle the case to the customer.
Dispute Agents	Responsible for settling the case. The dispute agent decides whether there are indications of fraud and if further investigation is required. The dispute agent also has to assess all documents received related to the case and determine how to process them.
Dispute Supervisors	If any special handling is required, the dispute supervisor makes the final decision how to proceed.
Data Analysts	In case where vendor fraud is suspected, the data analyst for example analyses transactions related to this vendor to detect patterns indicating fraud.

Role	Description
Business Analysts	If triggered by the dispute supervisor, the business analyst assesses whether the solution needs to be changed to support handling cases.
Fraud Investigators	When fraud is suspected, the fraud investigator works on the case and decides how to proceed.

Documents

Documents used in the Credit Card Dispute case type are noted in Table 10-3.

Table 10-3 Credit card dispute solution document types

Document Type	Description
Customer Correspondence	Documents received from customer (such as receipts) to support credit transaction dispute

Properties

The properties required to process the Credit Card Dispute case type are listed in Table 10-4.

Table 10-4 Credit card dispute solution properties

Property	Property Type
Credit Card Number	string
Statement ID	string
Transaction ID	string
Date Received	datetime
Amount	float
Dispute Status	string choice list
Charge Back Processed	boolean

10.3 Create a Credit Card Dispute solution

Complete the following steps to add the Credit Card Dispute solution using the Case Manager Builder wizard:

1. Log in to Case Manager Builder using the following URL:

`http://server:port/CaseBuilder`

For our scenario, this URL is:

`http://acmdev:9080/CaseBuilder`

Log in as a user with sufficient rights to create the case solution as shown in Figure 10-1.

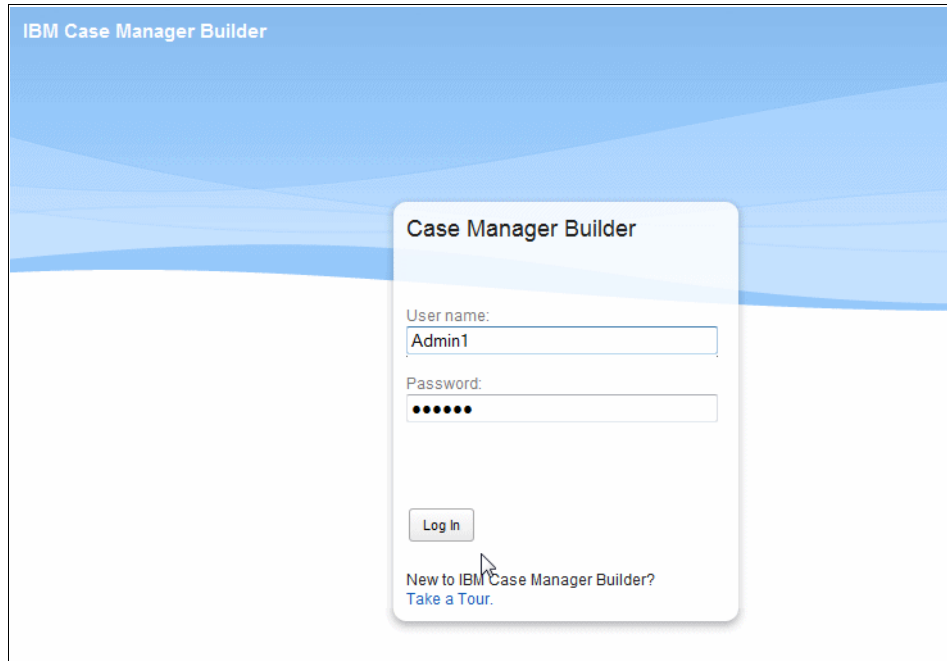


Figure 10-1 Logging into Case Builder

2. On the Manage Solutions window, select the option to **Use the wizard to define the solution** as shown in Figure 10-2 on page 284. Click **Add Solution** to create a new solution.

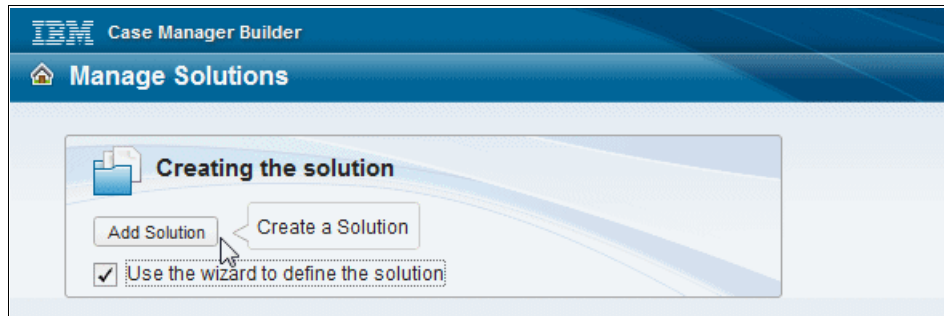


Figure 10-2 Creating a new solution using the wizard

3. Enter the name of the solution in the **Name** text box. A unique solution prefix is required for the solution that will be used to prefix all object types used in the solution. Enter a two to five alphanumeric character prefix in the **Solution prefix** text box. For our sample solution, we used the prefix CCD as shown in Figure 10-3.

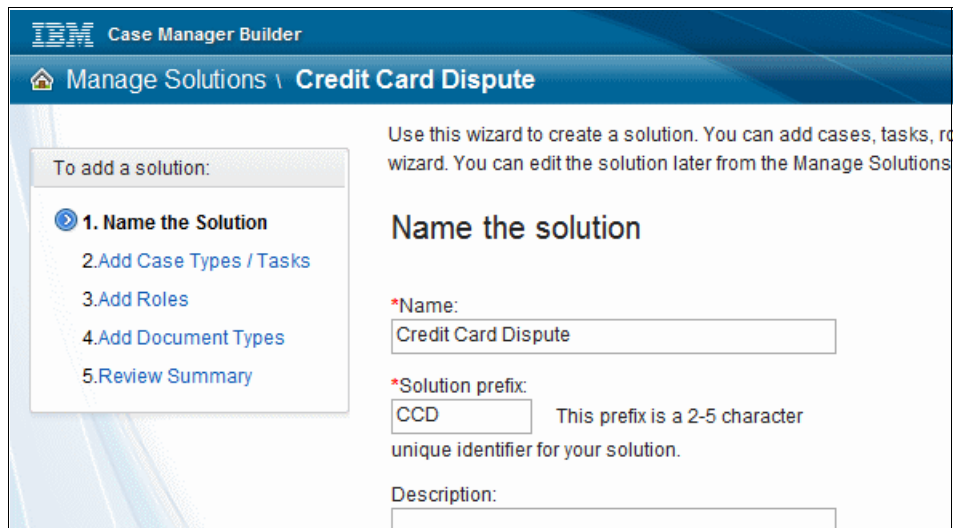


Figure 10-3 Naming the solution

4. To choose an icon to identify your solution, click the icon button and select an appropriate icon from the choice list. For our sample solution, we chose the credit card image as shown in Figure 10-4 on page 285. Click **Add Case Types**.

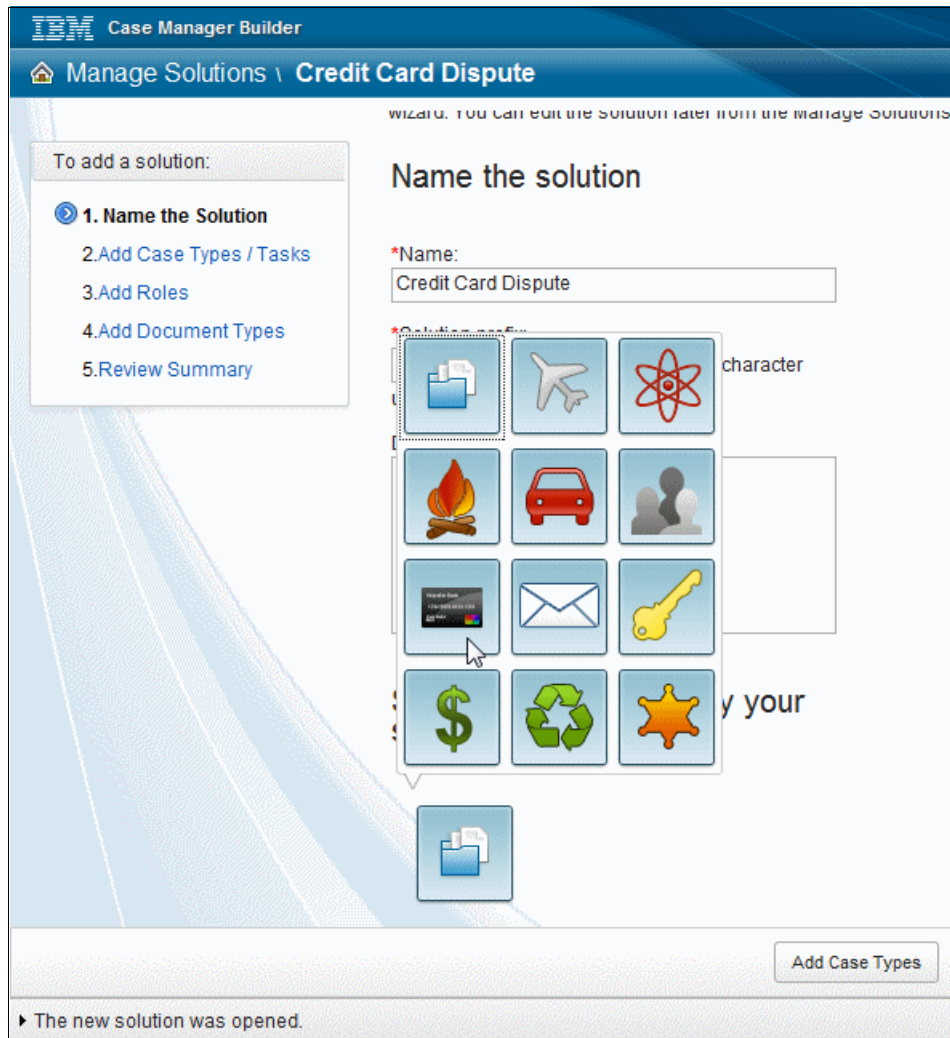


Figure 10-4 Choosing the solution icon.

5. A warning that the name and prefix cannot be changed after this point is displayed as shown in Figure 10-5 on page 286. Click **OK** to continue.

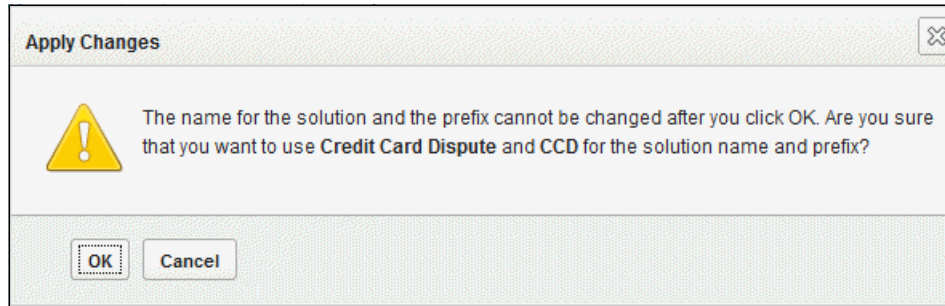


Figure 10-5 Name and prefix warning message

6. Type the name of the Case Type, in our example Credit Card Dispute, in the **Case type name** text box.
7. Add tasks to the Credit Card Dispute case type using the following steps:
 - a. Click **Add Task** as shown in Figure 10-6.

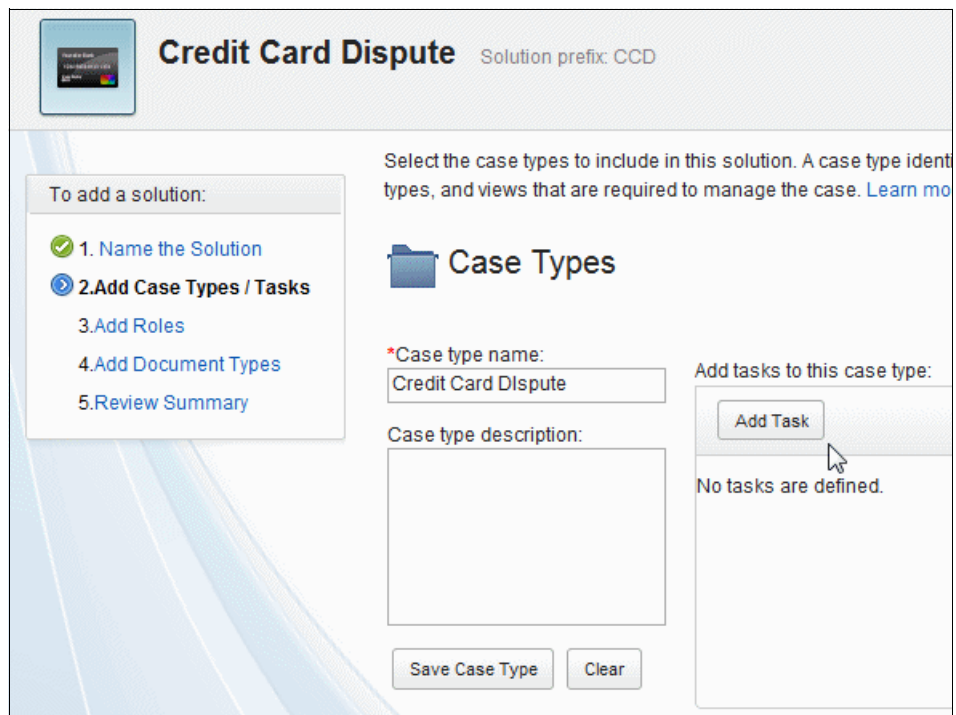


Figure 10-6 Adding tasks to the case type

- b. Type Send Confirmation Letter in the task **Name** field as shown in Figure 10-7. Click **OK** to add the task.

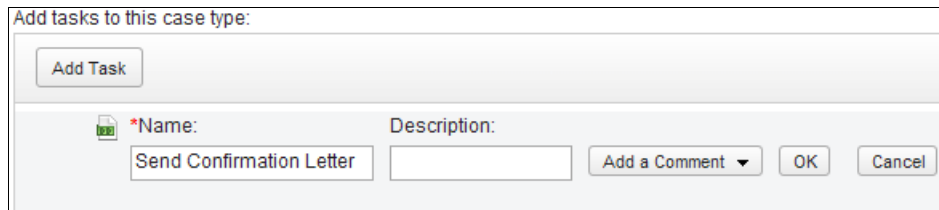


Figure 10-7 Adding a task

- c. Click **Add Task** again as shown in Figure 10-8 to add additional tasks.

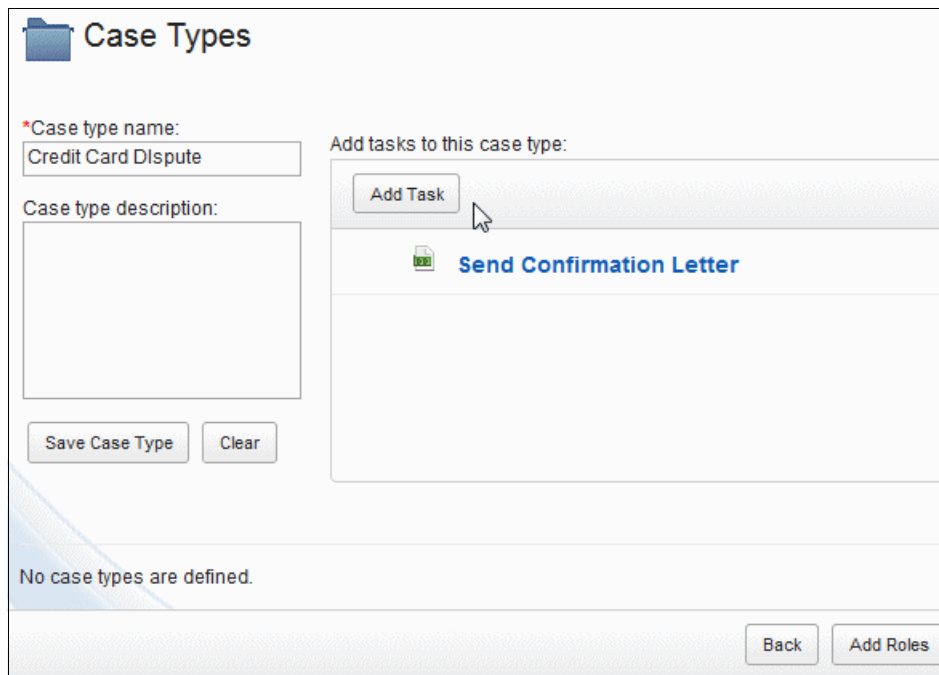


Figure 10-8 Adding additional tasks

- d. Add the following tasks:
- Manage Dispute
 - Process Charge Back
 - Customer Fraud Determination
 - Vendor Fraud Determination

Remember to click **OK** after adding each task. Otherwise when you click **Save Case Type**, a window box displays asking if you want to apply your changes.

The complete list of tasks should be similar to that shown in Figure 10-9.

e. Click **Save Case Type** to continue.

Case Types

*Case type name:
Credit Card Dispute

Case type description:

Save Case Type Clear

Add tasks to this case type:

Add Task

- Vendor Fraud Determination
- Customer Fraud Determination
- Process Charge Back
- Manage Dispute
- Send Confirmation Letter

No case types are defined.

Back Add Roles

Figure 10-9 Adding tasks complete

8. Add roles by performing the following steps:
 - a. Click **Add Roles** as shown in Figure 10-11 on page 289.

Note: If you didn't click **OK** for each added task, a window will display asking you if you want to apply or discard your changes. Click **Apply**. (Figure 10-10 on page 289)

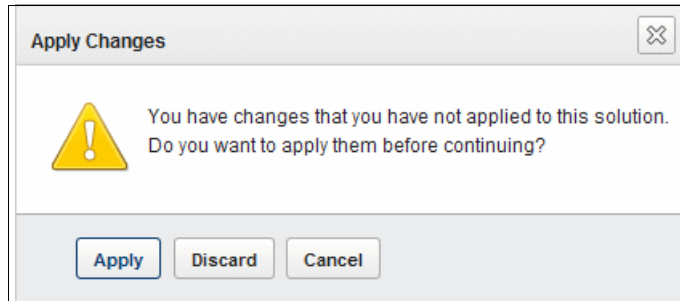


Figure 10-10 Apply changes window

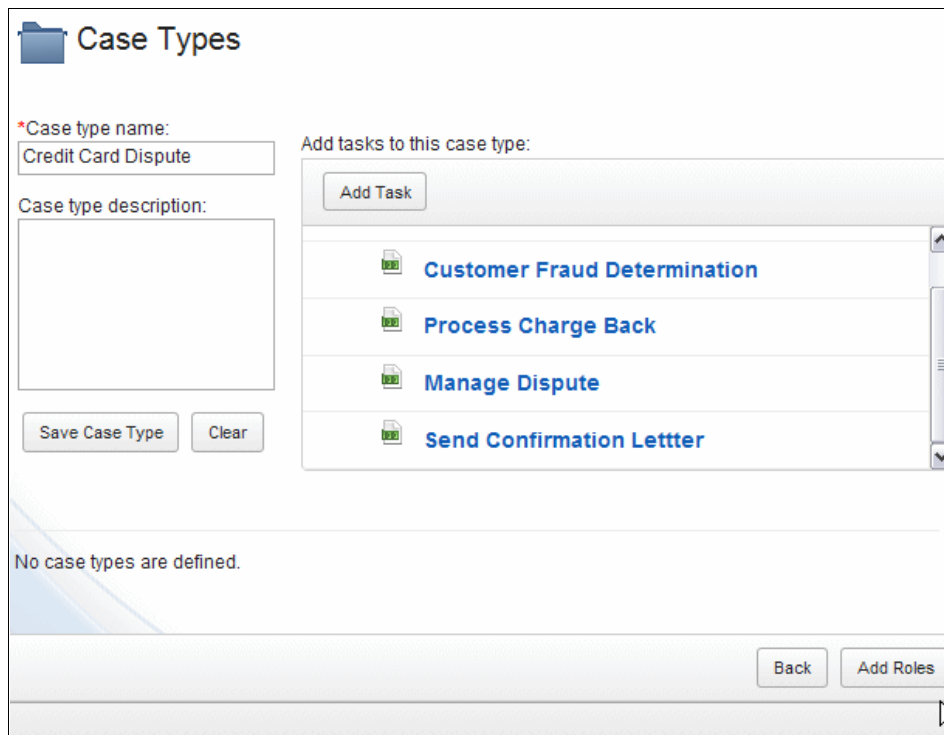


Figure 10-11 Click Add Roles

- b. Type Customer Services as the **Role Name** as shown in Figure 10-12 on page 290. Click **Save Role**.

Note: Roles should ideally map to LDAP groups rather than users. Therefore, use a group name for a role name.

Credit Card Dispute Solution prefix: CCD

To add a solution:

1. Name the Solution
2. Add Case Types / Tasks
3. Add Roles
4. Add Document Types
5. Review Summary

Select the roles for this task. A role is a way of grouping people by the example, auto claims supervisor. [Learn more.](#)

Roles

*Role Name:
Customer Services

Role Description:

Save Role Clear

Figure 10-12 Adding Roles

c. Add additional roles for the following:

- Dispute Agents
- Dispute Supervisors
- Data Analysts
- Business Analysts
- Fraud Investigators

The complete list of roles should look similar to that shown in Figure 10-13 on page 291.

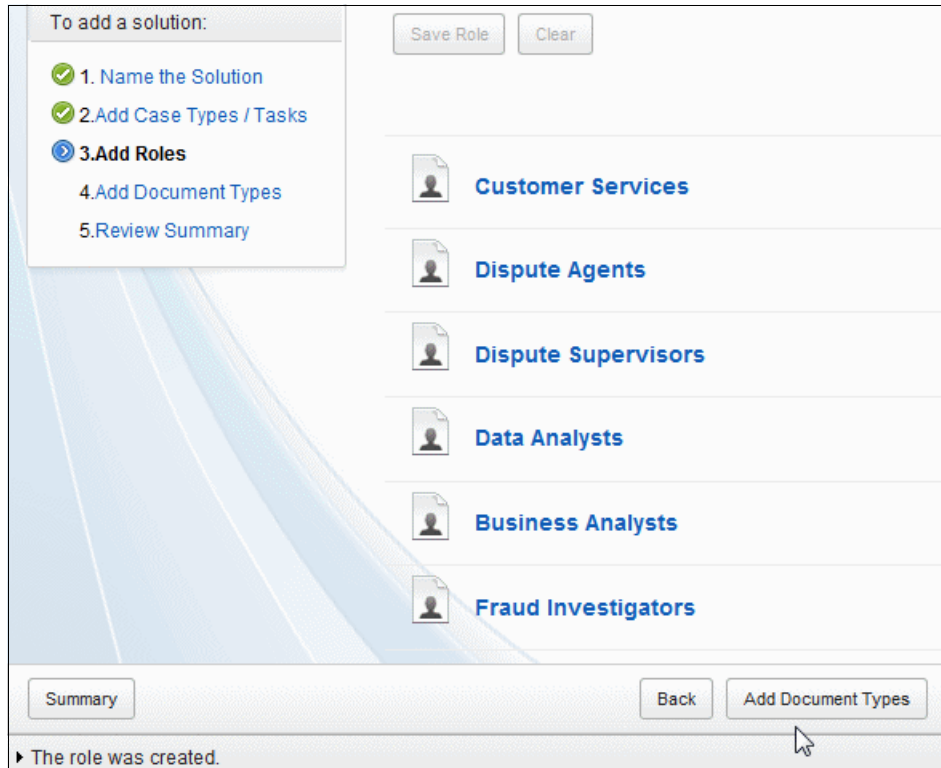


Figure 10-13 Roles now complete

9. Add document types by performing the following steps:
 - a. Click **Add Document Types**.
 - b. Type Customer Correspondence for the **Document Type Name** as shown in Figure 10-14 on page 292.

To add a solution:

- ✓ 1. Name the Solution
- ✓ 2. Add Case Types / Tasks
- ✓ 3. Add Roles
- 4. Add Document Types
- 5. Review Summary

Select the document types for this task. A document type category [Learn more.](#)

Document Types

*Document Type Name:
Customer Correspondence

Document Type Description:

Figure 10-14 Adding Document Types

- c. Click **Save Document Type**.
10. Because there is only one document type in this solution, click **Summary** to continue.
11. Scroll down and review the summary information as shown in Figure 10-15 on page 293. Click **Finish**.

Note: Prior to clicking **Finish**, you can still use various **Add** buttons to add other artifacts you might have missed.

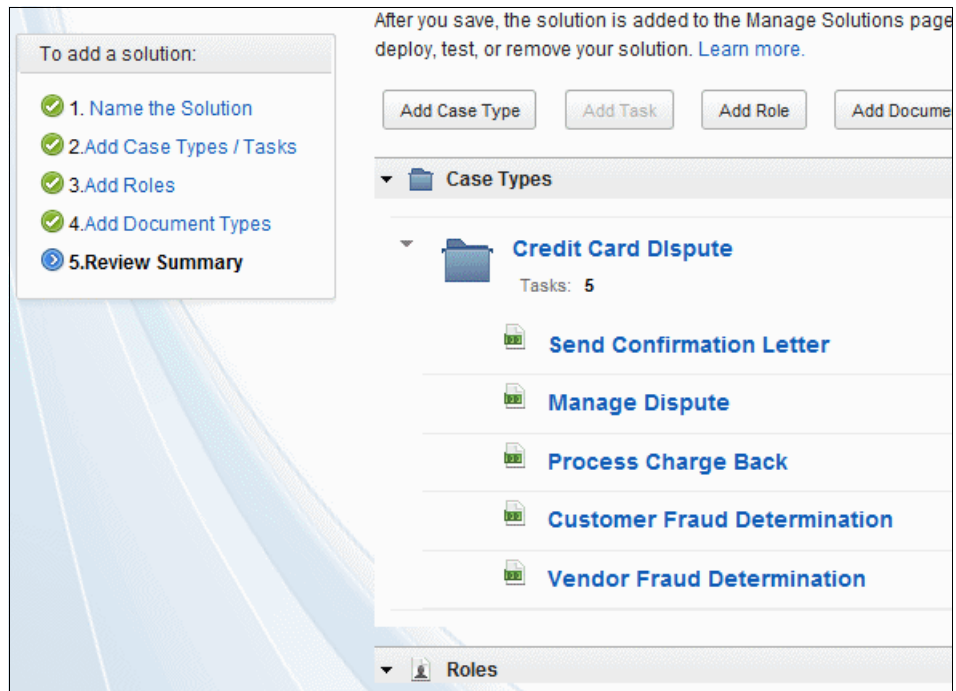


Figure 10-15 Review the summary

10.4 Set up and configure artifacts for the solution

After creating a solution using the Create Solution wizard, you need to set up and configure artifacts that are used for the solution. The artifacts include properties, roles, document types, personal in-basket, and case type. We cover how to set up tasks in the later section.

Note: While in Edit, it is a good idea to periodically save your work.

10.4.1 Set up properties

To set up properties for the solution, perform the following steps:

1. On the Manage Solutions home window, click the **Edit** link located under your solution name as shown in Figure 10-16 on page 294. You can also click the name of the solution to open it for editing.

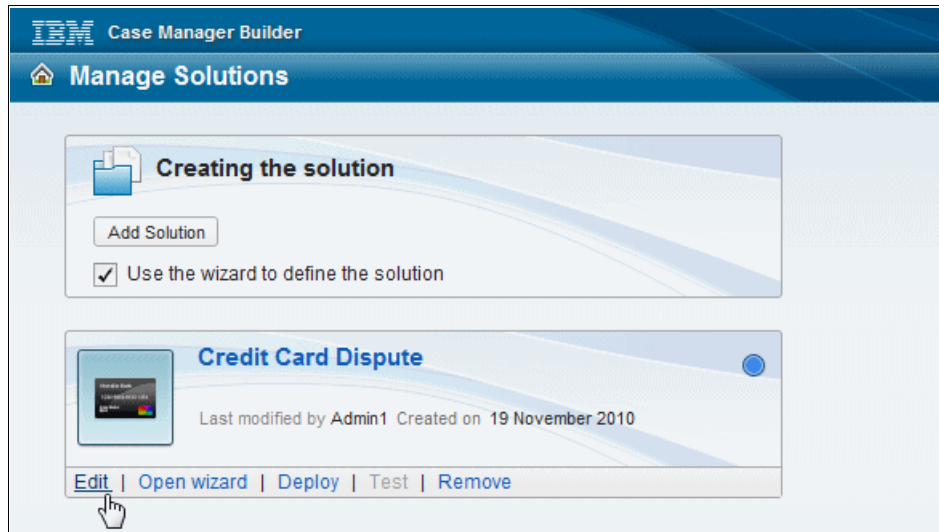


Figure 10-16 Editing the solution

2. Select the **Properties** tab. Click **Add Property** and select **New** from the dropdown list as shown in Figure 10-17.

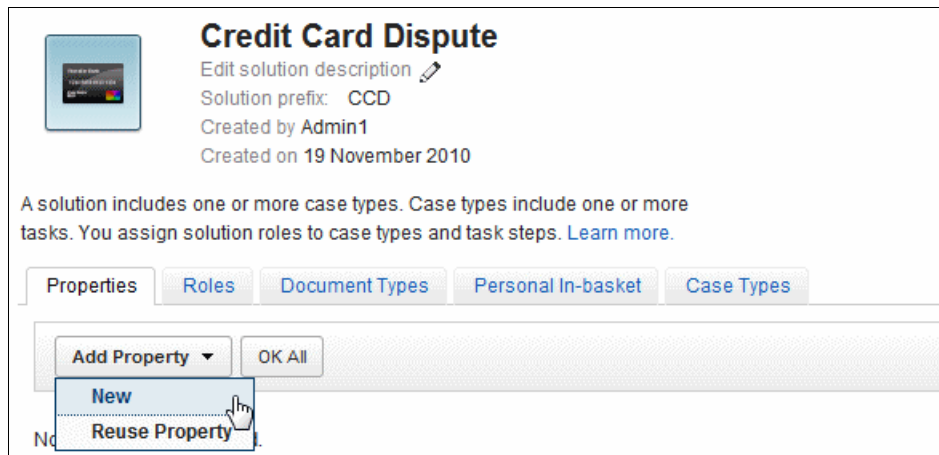


Figure 10-17 Adding properties to the solution

3. For the property **Name** field, type `Transaction ID`. For property **Type**, select **String** from the drop-down list as shown in Figure 10-18 on page 295.

Note: The basic property types are string, integer, datetime, float, and boolean.

Properties Roles Document Types Personal In-basket Case Types

Add Property ▼ OK All

Name: ^ Type: Description:

*Name: Transaction ID Type: String Description: OK Cancel

▸ Define Property Values

Figure 10-18 Adding a property

4. To define additional property characteristics, click **Define Property Values**. The expanded window, shown in Figure 10-19, provides a number of options similar to those available when adding properties using the FileNet Enterprise Manager snap-in for Content Engine.

Properties Roles Document Types Personal In-basket Case Types

Add Property ▼ OK All

Name: ^ Type: Description:

*Name: Transaction ID Type: String Description: OK Cancel

▾ Define Property Values

This property can have: ☒ A single value ☐ Multiple values

Maximum length:

Choice list: ☒ None ☐ Define Choice List

Default value:

*Unique Identifier CCD_ TransactionID

Figure 10-19 Defining property values

Note: The Case Manager Builder application does not provide a method for indexing property values. To index a property, you must use the FileNet Enterprise Manager on the target object store to set the index property. Properties used as case search criteria typically require indexing to improve performance. Monitor your system during testing and in production to determine the final set of properties to configure for indexing.

5. There are no special values required for the Transaction ID property. Click **OK** to continue. The property you created is added to the properties list as shown in Figure 10-20.

The screenshot shows the 'Properties' tab in the Case Manager Builder application. At the top, there are tabs for 'Properties', 'Roles', 'Document Types', 'Personal In-basket', and 'Case Types'. Below these tabs, there is a section with an 'Add Property' button and an 'OK All' button. A mouse cursor is pointing at the 'Add Property' button. Below this section, there is a table with three columns: 'Name:', 'Type:', and 'Description:'. The first row in the table shows 'Transaction ID' under 'Name:', 'String' under 'Type:', and an empty space under 'Description:'.

Figure 10-20 Adding additional properties

6. In the same manner, add the following properties as shown in Table 10-5.

Table 10-5 Additional properties

Property Name	Type
Statement ID	String
Credit Card Number	String
Date Received	Datetime
Amount	Float
Charge Back Processed	Boolean

7. Add an additional property named Dispute Status of type String. Click **Define Property Values** and select the **Define Choice List** radio button and click the **Define Choice List** button as shown in Figure 10-21 on page 297.

Properties Roles Document Types Personal In-basket Case Types

Add Property ▼ OK All

Name: ^ Type: Description:

*Name: Dispute Status Type: String Description: OK Cancel

▼ Define Property Values

This property can have:

☒ A single value

☐ Multiple values

Maximum length:

Choice list:

☐ None

☒ Define Choice List

Associate a choice list

Default value: <None> ▼

*Unique Identifier

CCD_ DisputeStatus

Figure 10-21 Adding a choice list

8. Click **Add Choice Item**. Add the choice list items as noted in Table 10-6.

Table 10-6 Choice list for Dispute Status property

Display Name	Value
Dispute Lodged	Dispute Lodged
Dispute Denied	Dispute Denied
Charge Back Processed	Charge Back Processed

Figure 10-22 on page 298 shows a sample choice list item entry.

Figure 10-22 Adding choice list items

9. Click **OK** at the bottom of the window to complete the choice list as shown in Figure 10-23.

Figure 10-23 Completed choice list

Note: Because of a known issue with run time regarding choice lists, we recommend that a default value be set for the choice list.

10. In the expanded Define Property Values area of the Dispute Status property, select **Dispute Lodged** from the drop-down list to be the default value as shown in Figure 10-24 on page 299. Click **OK**.

The dialog box shows the configuration for the 'Dispute Status' property. The 'Name' field contains 'Dispute Status', the 'Type' is set to 'String', and the 'Description' field is empty. Under the 'Define Property Values' section, 'This property can have:' has two options: 'A single value' (selected) and 'Multiple values'. The 'Maximum length:' field is empty. The 'Default value:' dropdown menu is open, showing options: '<None>', 'Dispute Lodged', 'Dispute Denied', and 'Charge Back Processed'. The '*Unique Identifier' section shows 'CCD_' followed by 'DisputeStatus'.

Figure 10-24 Set default value for the choice list

Note: It is a good idea to click **Save** after completing the properties configuration.

11. The completed property list should look similar to that shown in Figure 10-25.

The screenshot shows the 'Properties' tab of the application. At the top, there are tabs for 'Properties', 'Roles', 'Document Types', 'Personal In-basket', and 'Case Types'. Below the tabs, there is an 'Add Property' button with a dropdown arrow and an 'OK All' button. The main area displays a list of properties with columns for 'Name', 'Type', and 'Description'.

Name: ^	Type:	Description:
Charge Back Proce...	Boolean	
Dispute Status	String	
Amount	Float	
Date Received	DateTime	
Credit Card Number	String	
Statement ID	String	
Transaction ID	String	

Figure 10-25 Completed properties

10.4.2 Set up roles

After you set up the properties for your solution, you need to configure an in-basket and assign properties for each role defined earlier using the Solution Creation wizard.

To configure roles, perform the following steps (continuing from the previous section):

1. Select the **Roles** tab. Click the **Customer Services** role and type Customer Services Inbasket in the **In-basket name** field as shown in Figure 10-26.

The screenshot shows the 'Roles' configuration window in IBM Case Manager. The 'Roles' tab is selected at the top. Below the tabs are 'Add Role' and 'OK All' buttons. The main area is divided into two sections: '* Role' and '* In-basket name:'. The '* Role' section has a text field containing 'Customer Services' and an empty 'Description:' field. The '* In-basket name:' section has a text field containing 'Customer Services Inbasket' and an empty 'Description:' field. Below these fields is an 'Add Property' button with a dropdown arrow. At the bottom, there is a table with columns: 'Name', 'Sortable', 'Sort Default', and 'Sort Order'. The table currently displays the text 'No properties are defined.'

Figure 10-26 Configuring a role

2. Click **Add property** to display a list of available properties as shown in Figure 10-27 on page 301. Select the following properties from the list and click **OK**:
 - Credit Card Number
 - Date Received
 - Dispute Status
 - Statement ID
 - Transaction ID

You can add the properties one at a time by clicking the property and then clicking **OK**, or you can multi-select the properties by clicking the properties you want to add, then clicking **OK**.

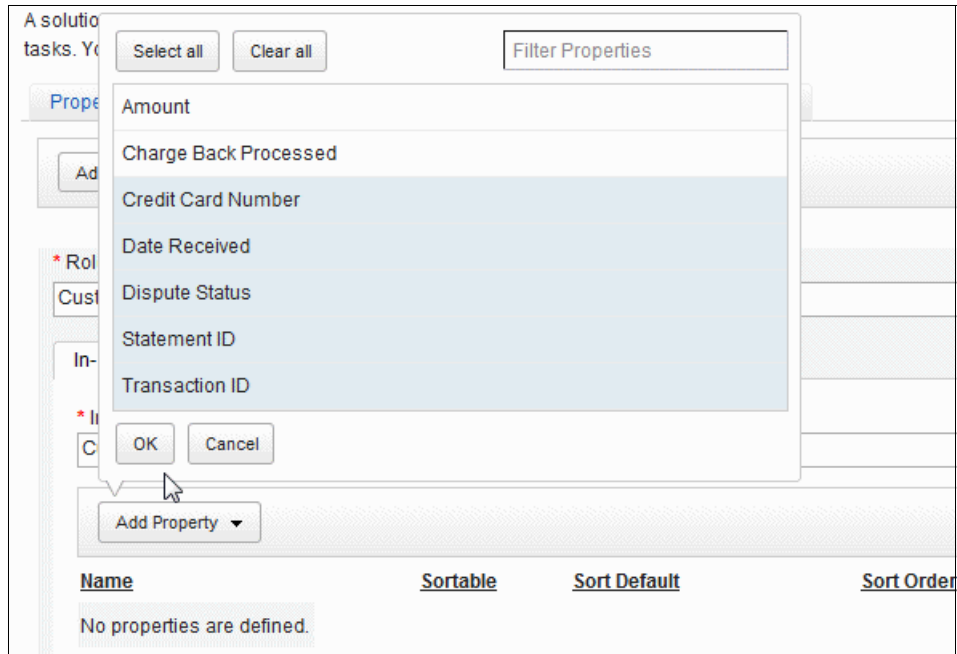


Figure 10-27 Selecting the in-basket properties

3. Set up sort information for the properties:
 - Date Received: Check the **Sortable** check box and set the sort order to **Descending**.
 - Transaction ID: Check the **Sortable** check box.
 - Dispute Status: Check the **Sortable** check box.

The results should look similar to that shown in Figure 10-28 on page 302.

4. Click **OK All** to complete the in-basket configuration for the Customer Services role.

Name	Sortable	Sort Default	Sort Order
Transaction ID	<input checked="" type="checkbox"/>	<input type="radio"/>	
Statement ID	<input type="checkbox"/>		
Credit Card Number	<input type="checkbox"/>		
Date Received	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	Descending
Dispute Status	<input checked="" type="checkbox"/>	<input type="radio"/>	

Figure 10-28 Configuring the in-basket sort parameters

- Perform the same configuration for the other roles. Assign the same properties and sort parameters as you did for the Customer Services role in-basket. See Table 10-7 for the role and in-basket names.

Table 10-7 Role In-basket configurations

Role Name	In-basket Name
Dispute Agents	Dispute Agents Inbasket
Dispute Supervisors	Dispute Supervisors Inbasket
Data Analysts	Data Analyst Inbasket
Business Analysts	Business Analysts Inbasket
Fraud Investigators	Fraud Investigators Inbasket

The complete list of roles should look similar to Figure 10-29 on page 303.

Note: It is a good idea to click **Save** after completing the roles configuration.

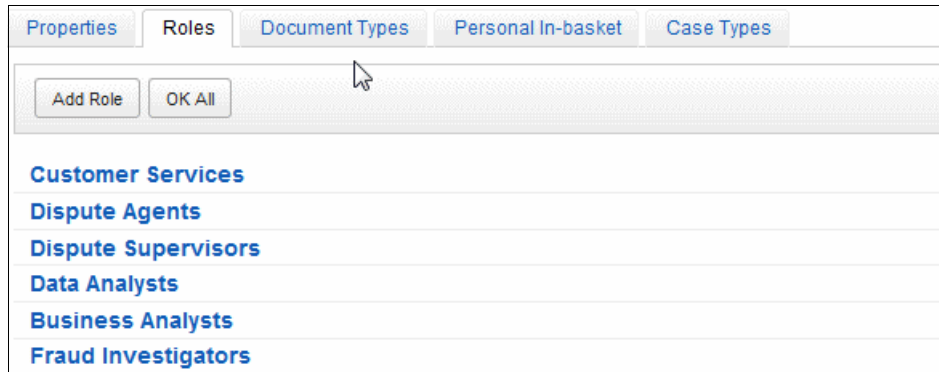


Figure 10-29 Role configuration completed

10.4.3 Set up document types

For your solution, you need to set up the necessary document types. For our Credit Card Dispute solution, we set up a document type for customer correspondence.

To set up the document type, perform the following steps (continuing from the previous step):

1. Select the **Document Types** tab.
2. Select the **Customer Correspondence** document type in the left pane by clicking next to the name (not on it) so that the Customer Correspondence document type is highlighted.
3. Click **Add Property** and select **Existing**. Click **Select all** as shown in Figure 10-30 on page 304 to assign all existing properties to the document type. Click **OK**, then **OK All** to complete the document property configuration.

Note: Generally, the properties for documents will be significant to the document rather than the case. In this example, we are using the case properties for illustrative purposes only.

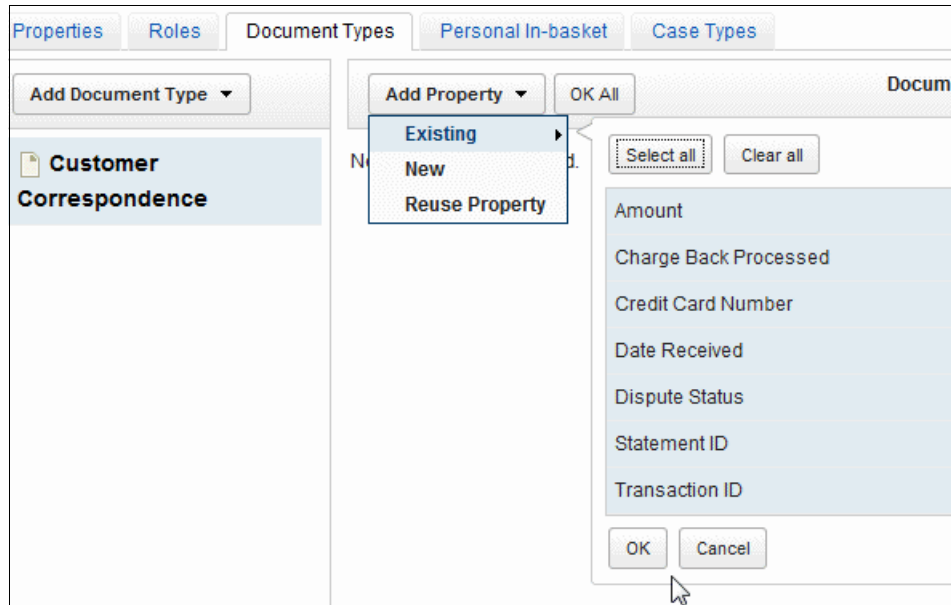


Figure 10-30 Setting document properties

10.4.4 Set up personal in-baskets

Personal in-baskets contain work items assigned to a user rather than a role.

1. Select the **Personal In-basket** tab. Type My Inbasket in the **In-basket name** field.
2. Click **Add property** to display a list of available properties. Select all the properties from the list and click **OK**.
3. Set up sort information for the properties:
 - Date Received: Select the **Sortable** check box and set the sort order to **Descending**.
 - Transaction ID: Select the **Sortable** check box.
 - Dispute Status: Select the **Sortable** check box.

The results should look similar to that shown in Figure 10-31 on page 305.

Name	Sortable	Sort Default	Sort Order
Transaction ID	<input checked="" type="checkbox"/>	<input type="radio"/>	
Statement ID	<input type="checkbox"/>		
Credit Card Number	<input type="checkbox"/>		
Date Received	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	Descending
Amount	<input type="checkbox"/>		
Dispute Status	<input checked="" type="checkbox"/>	<input type="radio"/>	
Charge Back Proce...	<input type="checkbox"/>		

Figure 10-31 Configuring the personal in-basket

As with all in-baskets, filters can be added to limit the returned items in the in-basket, but these can be added later.

4. Click **Save**.

10.4.5 Set up case type

To set up the Credit Card Dispute case type, perform the following steps:

1. Click the **Case Types** tab.
2. Click the **Credit Card Dispute** case type as shown in Figure 10-32.

Figure 10-32 Configuring case types

3. The Case Type configuration page is shown in Figure 10-33. The options include configuring the document type so it will add a case upon document creation, and options for changing the default page for displaying the add case and case details web pages. As we are creating cases manually for this solution and use the default pages, we will leave these options unchanged.

Case Type

Specify attributes for the case type. Page layouts are used by the Case Manager Client. [Learn more.](#)

*Case type name:
Credit Card Dispute

*Case type unique identifier:
CCD_CreditCardDispute

Case type description:

Starting document type:
<None>

Default layout for Add Case page:
Default Add Case page

Default layout for Case Details page:
Default Case Details page

Override default case details page layout for:
Business Analysts

Role	Case details page layout
------	--------------------------

Figure 10-33 Configuring the case type

4. In the left pane, select the **Properties** option to configure which properties are available within the case. Add all the declared properties to the case by clicking **Add Property** → **Existing** → **Select all** → **OK** as shown in Figure 10-34 on page 307. Click **OK All**.

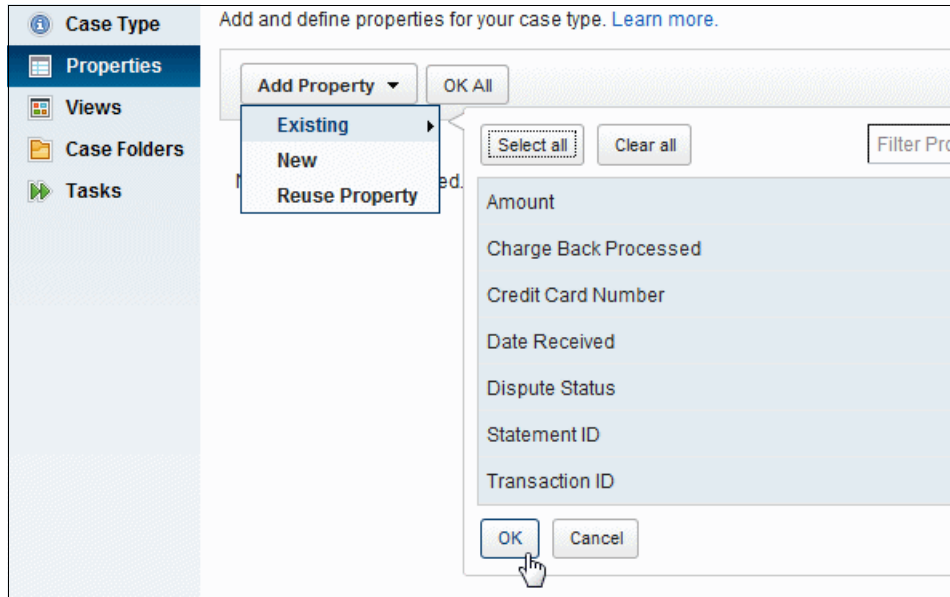


Figure 10-34 Configuring the case properties

5. In the left pane, select the **Views** option as shown in Figure 10-35 on page 308. The views for the Case Summary, Case Data and Case Search are configured on this page, so only the properties desired for each view are displayed.

Note: To the right of each of the properties in the **Available Properties** field is an arrow to move them into the **Properties in the Case Summary view** field. Clicking the arrow will move the property between the two fields.

The order the properties will appear in the view will be the order they appear in this field. The properties can be moved up or down by clicking the **Move Up** or **Move Down** icons to the right of the property name.

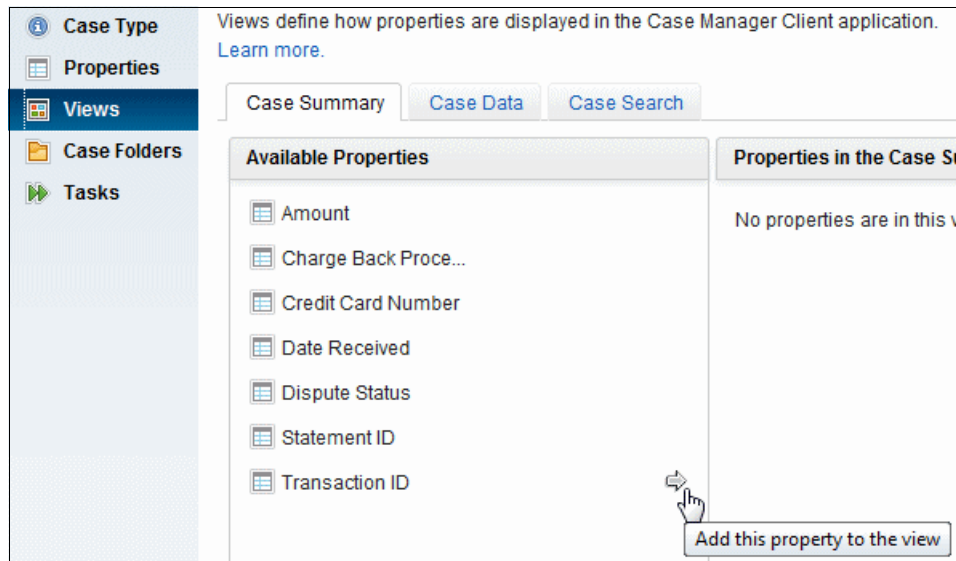


Figure 10-35 Configuring the case views

6. Configure the **Case Summary** view as shown in Figure 10-36.

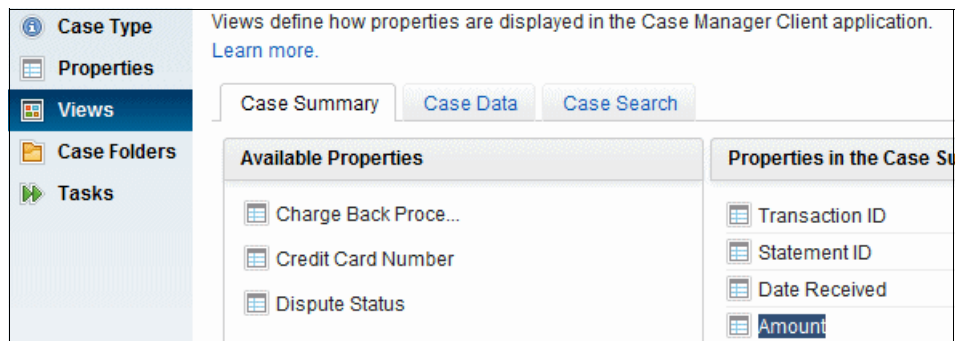


Figure 10-36 Case Summary view configuration completed

7. Click the **Case Data** tab. Configure the **Case Data** view as shown in Figure 10-37 on page 309.

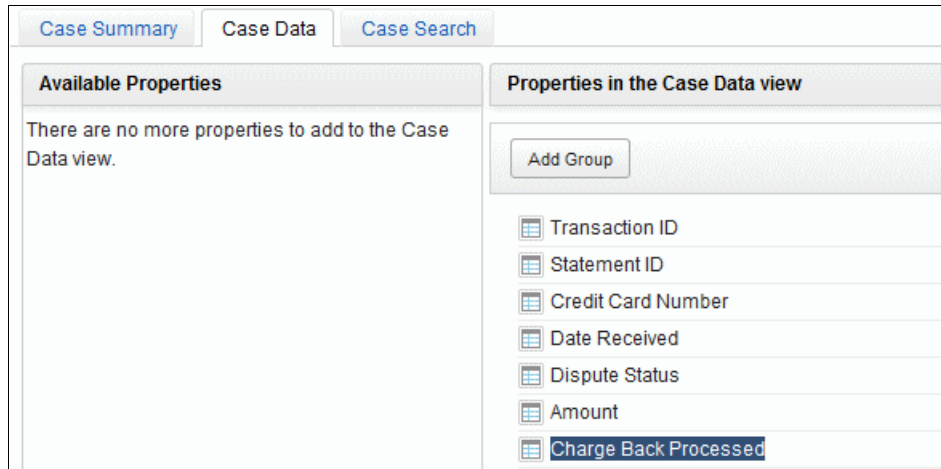


Figure 10-37 Case Data view configuration completed

8. Select the **Case Search** tab. Configure the **Case Search** view as shown in Figure 10-38.

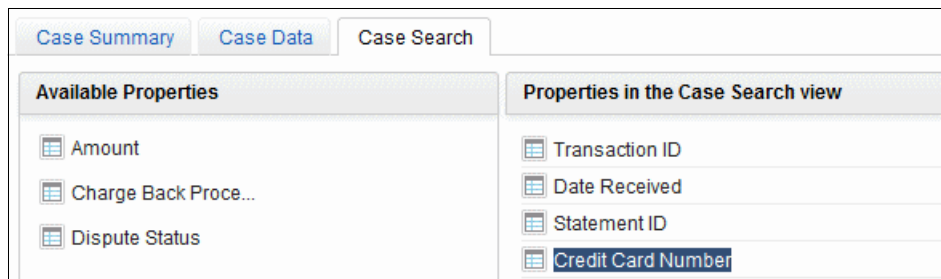


Figure 10-38 Case Search view configuration completed

9. In the left pane, select the **Case Folders** option to create folders for storing case objects. Click **Add Folder**. Enter Customer Correspondence as the folder name as shown in Figure 10-39. Click **OK**.

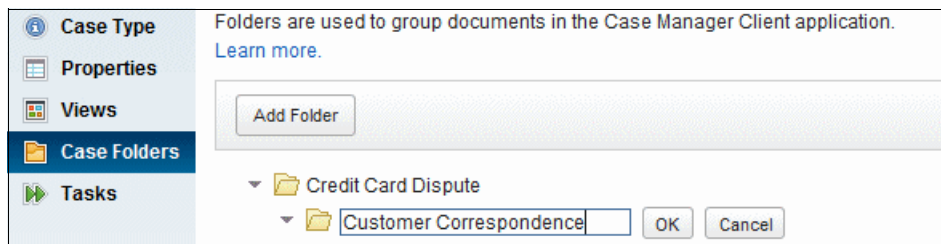


Figure 10-39 Case Folder configuration

10. Click **Save** to save your work.

10.5 Set up tasks

On the Tasks page, we can see the tasks that were created using the wizard as shown in Figure 10-40 on page 310. Because these tasks have not yet been configured, they all appear as optional tasks.

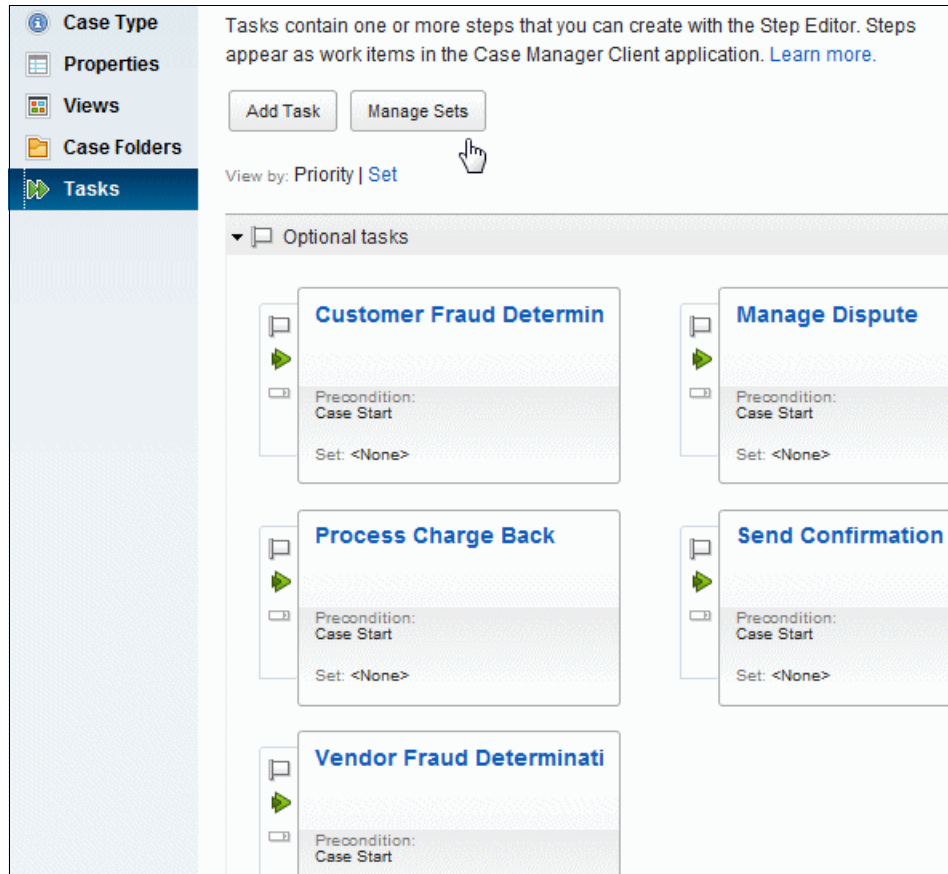


Figure 10-40 Tasks configuration

First, you will need to create a task set to set two tasks as mutually exclusive later in this procedure.

To create a task set, perform the following steps:

1. In the left pane, select the **Tasks** option.

2. Click **Manage Sets** as shown in Figure 10-40 on page 310.
3. Click **Add Set** and type Fraud Determination as the name of the manage set. Select the **A mutually exclusive set** radio button. Click **OK** to complete the creation of the Fraud Determination set as shown in Figure 10-41. Click **OK** at the bottom of the Manage Sets window to close the window. The set will be associated with tasks later in this procedure.

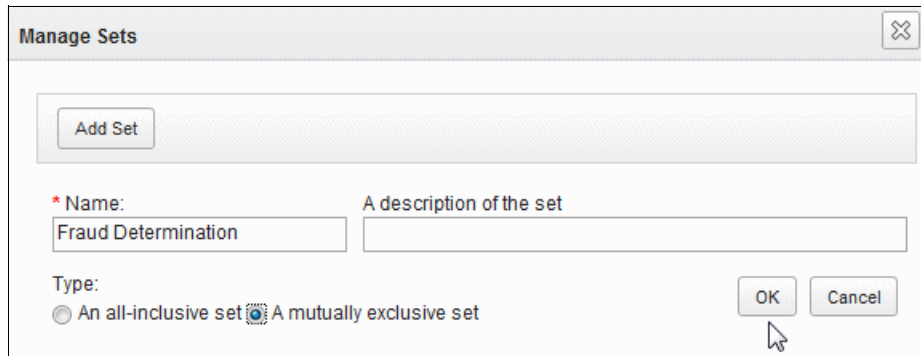


Figure 10-41 Creating a managed task set

10.5.1 Edit the Send Confirmation Letter task

For the Send Confirmation Letter task, you will want to set the task as required and to start automatically.

Perform the following steps to edit the Send Confirmation Letter task:

1. Move the cursor to the right of the Send Confirmation Letter task and click **Edit Task**, which has an image of a pencil as shown in Figure 10-42 on page 312.

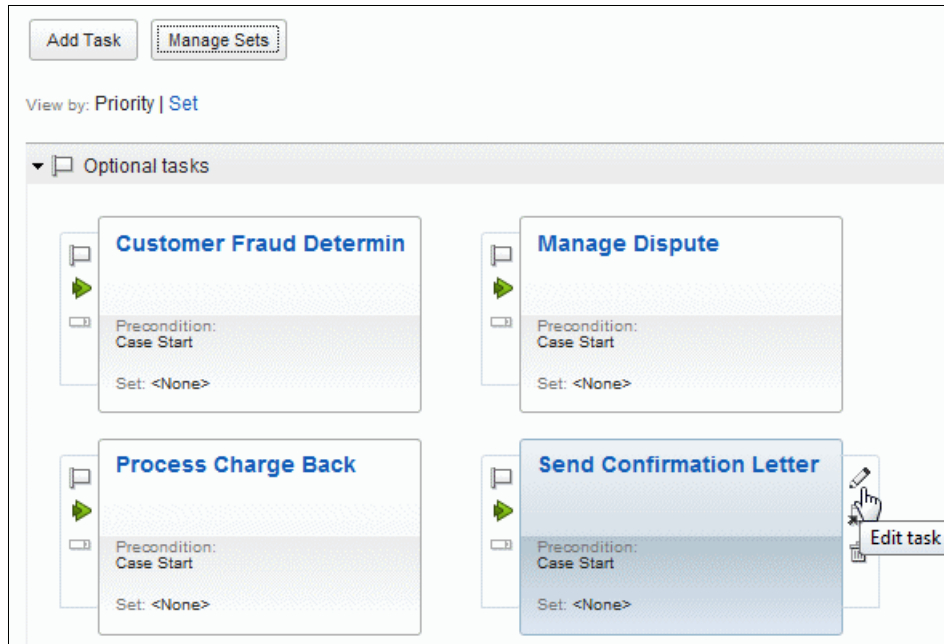


Figure 10-42 Configuring a task

2. Select the **Task Starts: Automatically** radio button and the **Required** check box as shown in Figure 10-43 on page 313. Click **OK**. This will cause the task to start when the case is added.

General Preconditions Design Comment

*Name:
Send Confirmation Letter

*Unique Identifier
CCD_ SendConfirmationLetter

Description:

Task Starts:
☒ Automatically
 ☐ Manually
 ☐ If user creates task

☒ Required

Assign to set:
 <None> Manage Sets

OK Cancel

Figure 10-43 General configuration of task

Figure 10-44 shows that the Send Confirmation Letter task has been moved to the **Required Tasks** pane, with a precondition of **Case Start**.

Add Task Manage Sets

View by: Priority | Set

Required tasks

Send Confirmation Letter

Precondition:
Case Start

Set: <None>

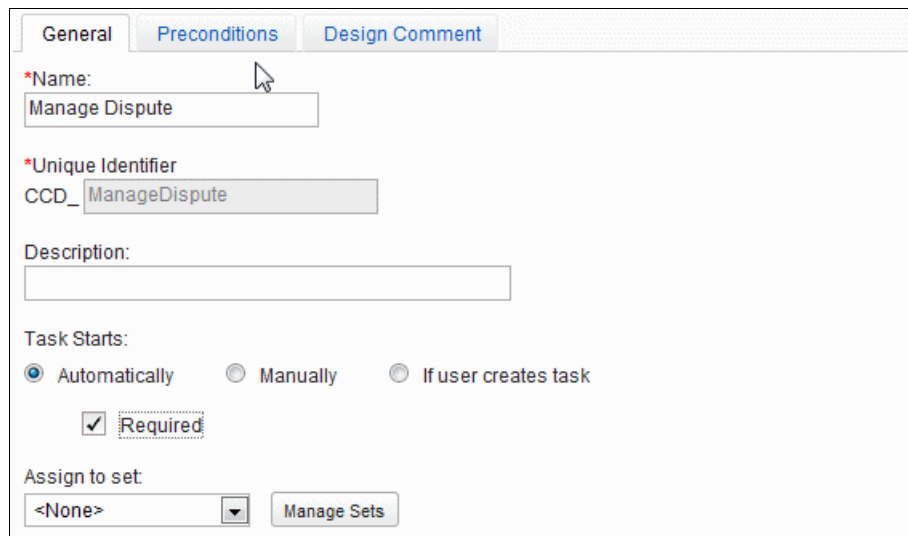
Figure 10-44 Send Confirmation Letter task

10.5.2 Edit the Manage Dispute task

For the Manage Dispute task, you will want to set the task to start automatically and define a precondition.

Perform the following steps to edit the Manage Dispute task:

1. Move the cursor to the right of the Manage Dispute task and click the **Edit Task** icon.
2. Select the **Task Starts: Automatically** radio button and the **Required** check box (Figure 10-45).



The screenshot shows a dialog box with three tabs: 'General', 'Preconditions', and 'Design Comment'. The 'General' tab is active. It contains the following fields and controls:

- *Name:** A text box containing 'Manage Dispute'.
- *Unique Identifier:** A text box containing 'CCD_ManageDispute'.
- Description:** An empty text box.
- Task Starts:** Three radio buttons: 'Automatically' (selected), 'Manually', and 'If user creates task'.
- Required:** A checked checkbox.
- Assign to set:** A dropdown menu showing '<None>' and a 'Manage Sets' button.

Figure 10-45 Configuring the Manage Dispute task

3. Click the **Preconditions** tab.
4. Set the precondition type to **A document added to the case**. Select the **Document of a type defined for this case** radio button, and select the **Customer Correspondence** document class from the drop-down list as shown in Figure 10-46 on page 315.

Note: This precondition configuration allows for the Manage Dispute task to launch any time correspondence from the customer is added as a document of document class “Customer Correspondence” to the Content Engine.

Figure 10-46 Configuring the Manage Dispute task precondition

5. Click **OK** to complete the Manage Dispute task configuration.

10.5.3 Edit the Process Charge Back task

For the Process Charge Back task, you will want to set the task to start automatically and define a precondition based on a property.

Perform the following steps to edit the Process Charge Back task:

1. Move the cursor to the right of the Process Charge Back task and click the **Edit Task** icon.
2. Select the **Task Starts: Automatically** radio button (Figure 10-47 on page 316) Click the **Preconditions** tab.

General | Preconditions | Design Comment

*Name:
Process Charge Back

*Unique Identifier
CCD_ProcessChargeBack

Description:

Task Starts:
☒ Automatically ☐ Manually ☐ If user creates task

☐ Required

Assign to set:
 <None> ▼ Manage Sets

OK Cancel

Figure 10-47 Configuring the Process Charge Back task

- Set the precondition type to **A property condition is met** and click **Add Condition**. Select the Dispute Status property and configure the property condition as shown in Table 10-8.

Table 10-8 Property condition values

Parameter	Value
Property	Dispute Status
Operator	= (equal)
Value	Charge Back Processed

- The property condition configuration should look similar to that shown in Figure 10-48 on page 317. Click **OK** to complete the Process Charge Back task configuration.

Note: This precondition configuration allows for the Process Charge Back task to launch when the Dispute Status property is set to Charge Back Processed.

General Preconditions Design Comment

What preconditions must be met for this activity to start?

☐ A document added to the case ☒ A property condition is met ☐ No precondition, start task

Add Condition AND the following conditions

Property	Operator	Value
Dispute Status	=	Charge Back Process

Figure 10-48 Configuring the Process Charge Back task precondition

10.5.4 Edit the Customer Fraud Determination task

For the Customer Fraud Determination task, you will want to set the task to start manually. Also, the Customer Fraud Determination task will be an optional task that is mutually exclusive from the Vendor Fraud Determination task.

To configure this task, perform the following steps:

1. Move the cursor to the right of the Customer Fraud Determination task and click the **Edit Task** icon.
2. Select the **Task Starts: Manually** radio button.
3. From the Assign to set drop-down list, select **Fraud Determination** as shown in Figure 10-49.

General Preconditions Design Comment

*Name:
Customer Fraud Determination

*Unique Identifier
CCD_CustomerFraudDetermination

Description:

Task Starts:
☐ Automatically ☒ Manually ☐ If user creates task
☐ Required

Assign to set:
 Fraud Determination Manage Sets

Figure 10-49 Configuring the Customer Fraud Determination task

4. Click **OK** to complete the Customer Fraud Determination task configuration.

10.5.5 Edit the Vendor Fraud Determination task

The Vendor Fraud Determination task is set up the same way as the Customer Fraud Determination task:

1. Select the **Task Starts: Manually** radio button.
2. Assign to set dropdown list, select **Fraud Determination**.
3. Click **OK**.

Note: It is a good idea to save the tasks' configuration before configuring the workflow diagrams.

10.6 Configure workflow diagrams using step editor

Use the Case Manager Builder step editor to create workflow diagrams for the following tasks:

- ▶ Manage Dispute task
- ▶ Customer Fraud Determination task
- ▶ Vendor Fraud Determination task
- ▶ Process Charge Back task

In the current version, the initiating attachment for a task must be a single attachment and not an array of attachments. After creating the Manage Dispute task, use Process Designer to set the attachment to single.

The Send Confirmation Letter task will be modified later in this procedure using the Process Designer applet in Workplace XT to add a component step task for interfacing with third-party letter-generation software. This process is not supported in the Case Manager Builder Step Editor.

10.6.1 Create the Manage Dispute task diagram

To create a workflow diagram for the Manage Dispute task, perform the following steps:

1. Move the cursor to the right of the Manage Dispute task and click the **Open Step Editor** icon, located just below the **Edit Task** icon, as shown in Figure 10-50 on page 319.

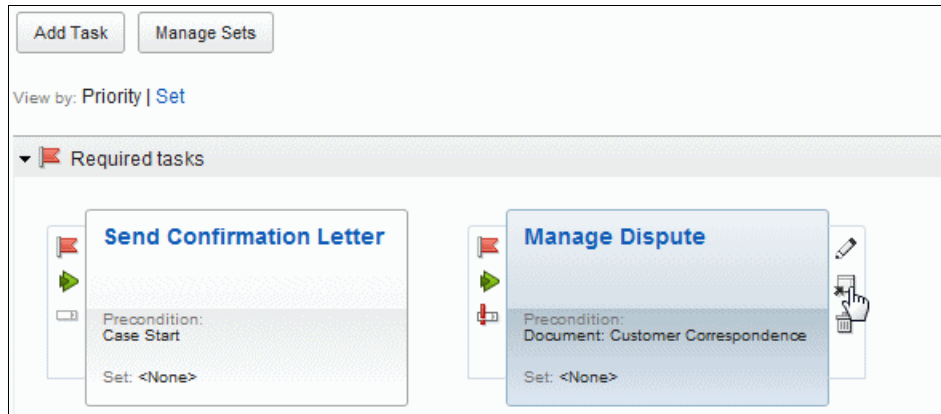


Figure 10-50 Selecting the task step editor

2. The Step Editor interface is displayed as shown in Figure 10-51 on page 320. The Step Editor task workflow pane consists of horizontal sections known as *swimlanes*. Apart from the **System** and **Undeclared Participants** swimlanes, each new swimlane represents a user role. Steps are added to the swimlanes and the work is routed between the steps by **Connectors**.

Note: For more information about how to use the step editor, see 8.3, “Adding a workflow diagram using Step Editor” on page 238.

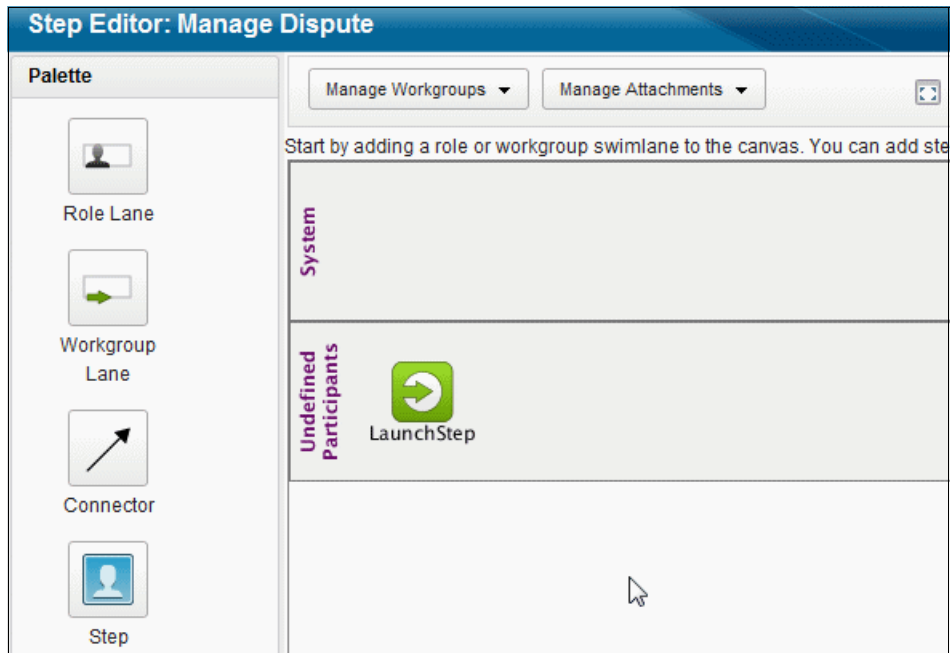


Figure 10-51 Using the step editor to design the Manage Dispute workflow task

3. Create the attachment that initiates the task as a property in the workflow as shown in Figure 10-52 on page 321:
 - a. Click **Manage Attachments** at the top of the step editor.
 - b. Click **Add Attachment**.
 - c. For the Attachment Name field, type CustomerCorrespondence (no spaces allowed).
 - d. For the Prompt field, type Customer Correspondence.
 - e. Click **OK** and then **Close**.

Note: You must create the attachment in each task's diagram if you are going to expose the attachment to the step in the parameters window.

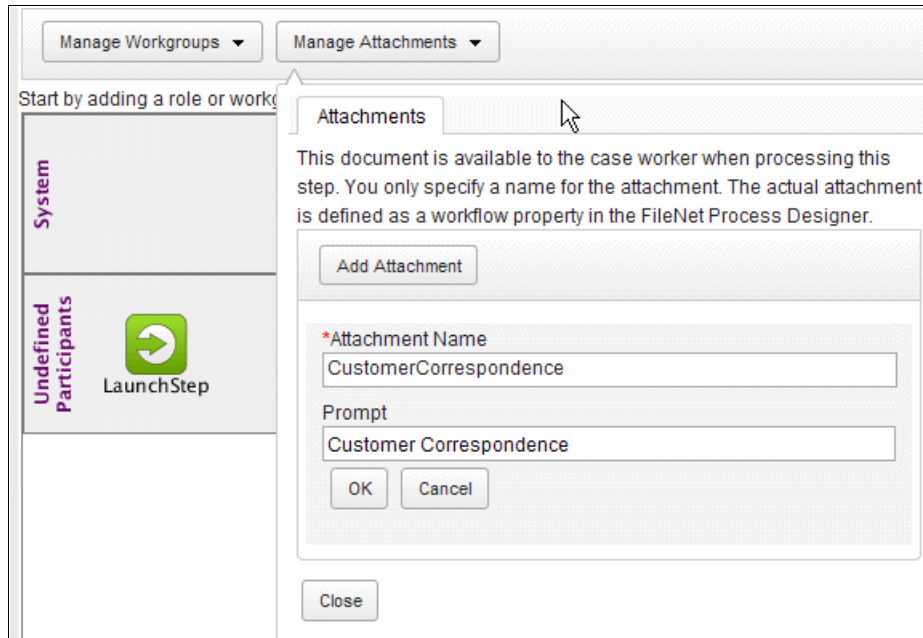


Figure 10-52 Create the attachment so it is available as a parameter to the step

4. Add a new role lane by clicking the **Role Lane** icon at the top left of the step editor, and dragging that onto the unused whitespace in the workflow pane. The result is shown in Figure 10-53 on page 322.

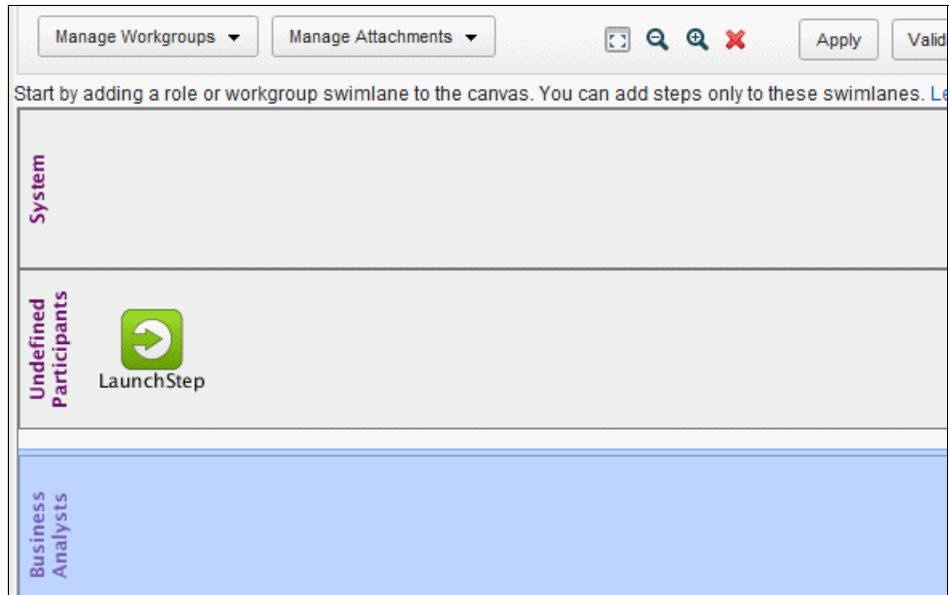


Figure 10-53 Adding a new Role Lane to a task

5. The step editor assigns the default role to the new swimlane. To edit the role, perform the following steps:
 - a. In the left pane, place your mouse just to the right of the Role field and click the **Edit** icon (pencil).
 - b. From the Assign Role drop-down list, choose **Dispute Agents** as shown in Figure 10-54 on page 323. Click **OK**.

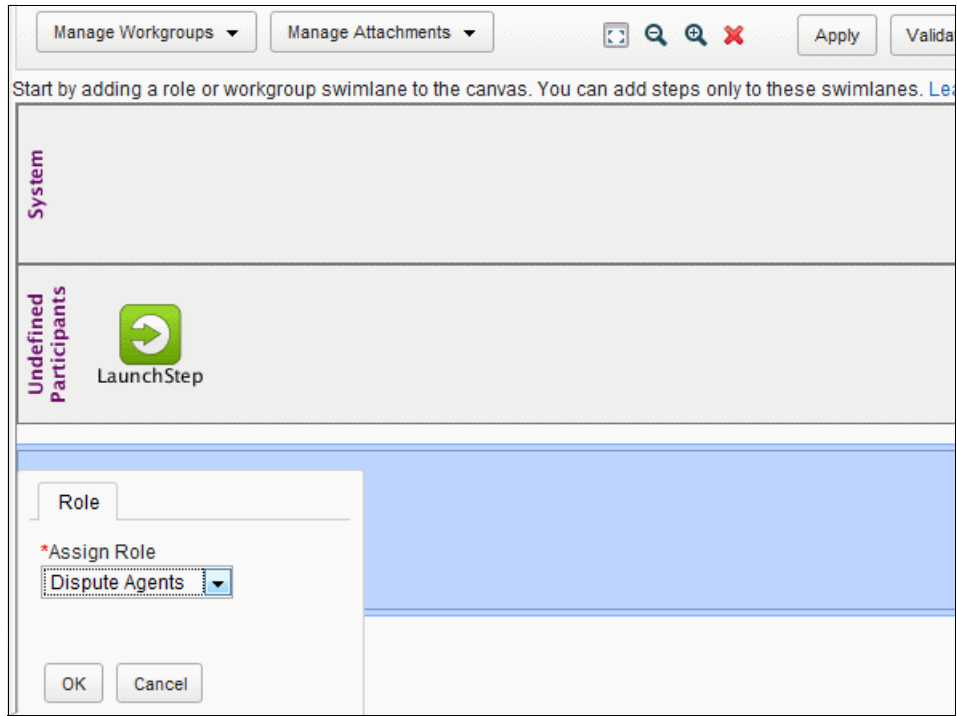


Figure 10-54 Setting the role for the role lane

- c. Click **OK** in the Role Property window. The role assignment is updated.
6. Add another new role lane to the diagram. Assign the role **Customer Services** to the new lane.
7. Drag and drop a **Step** icon onto the Dispute Agents swimlane. The result is shown in Figure 10-55 on page 324.

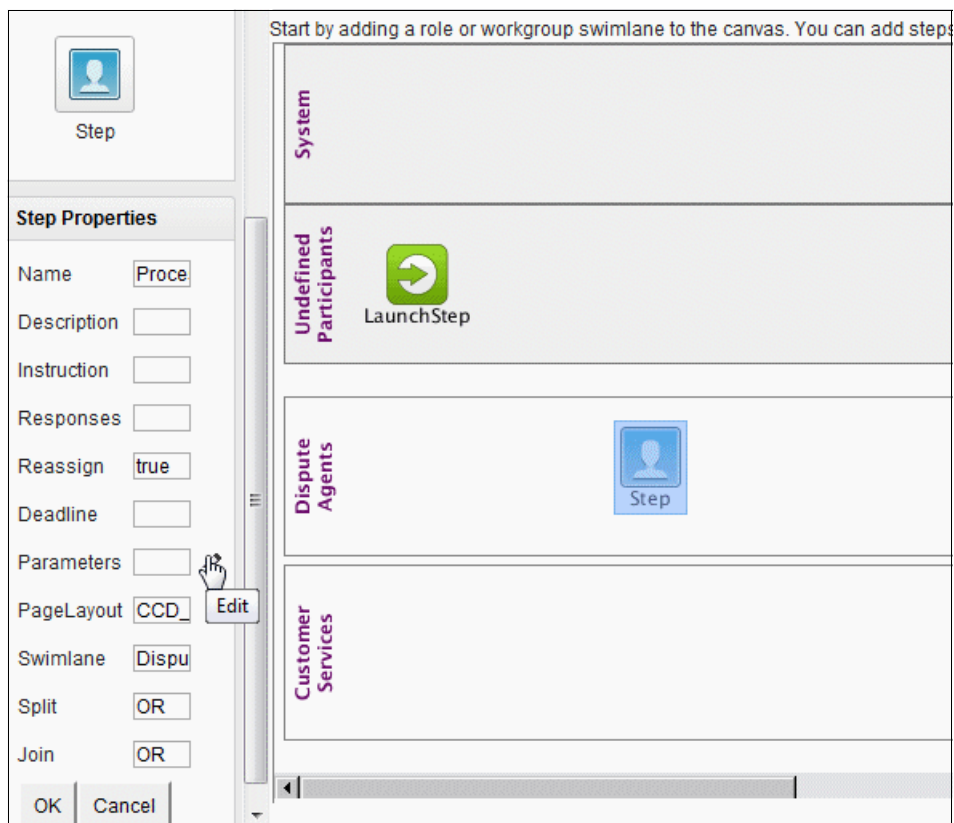


Figure 10-55 Edit the step properties

8. In the Step Properties pane (on the left), enter Process Dispute in the Name text box.
9. Click the **Edit** icon to the right of the Parameters field (Figure 10-55).
10. From the **Case Properties** tab, click **Select Property**. Click **Select all** to choose all the case properties as shown in Figure 10-56 on page 325. Click **OK**.

Note: For this example, we map all the case properties to data fields in the task (workflow), although this is not necessary. Only those fields required by the task need to be mapped.

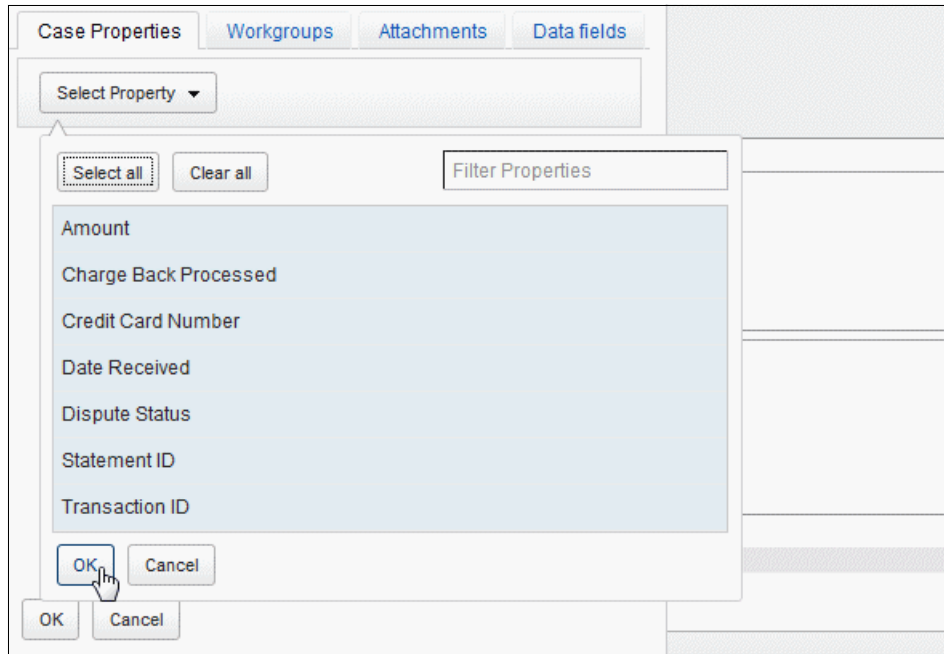


Figure 10-56 Editing the step parameters

11. Set all properties to **Read only**. The result is shown in Figure 10-57.

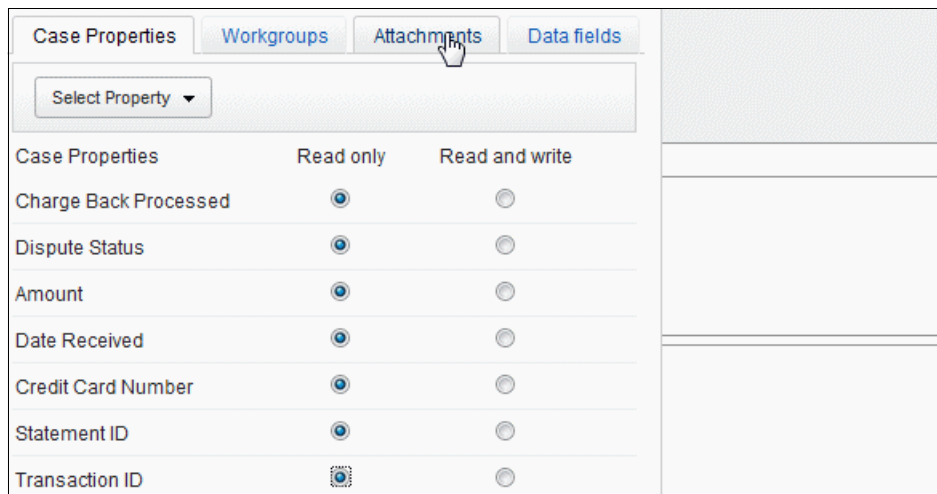


Figure 10-57 Setting read/write status of task properties

12. Click the **Attachments** tab.

13. Click **Select Attachment**, and select the **CustomerCorrespondence** attachment as shown in Figure 10-58. Click **OK**.

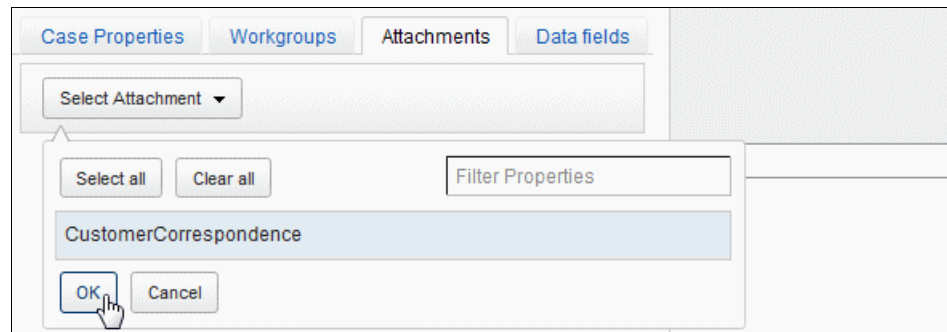


Figure 10-58 Editing the step attachment property

14. Set the attachment as **Read only** as shown in Figure 10-59. Click **OK** to complete the step parameter editing and then click **OK** in the step properties to ensure the changes are applied.

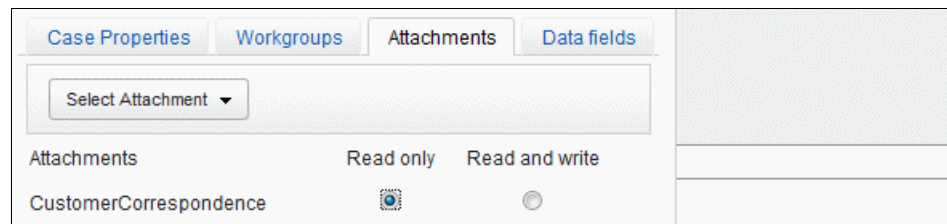


Figure 10-59 Setting the attachment as Read only

15. Click the **Connector** icon in the Palette section as shown in Figure 10-60 on page 327. Next, click the **LaunchStep** and drag the mouse while holding the left mouse button to the **Process Dispute** step to connect the two steps.

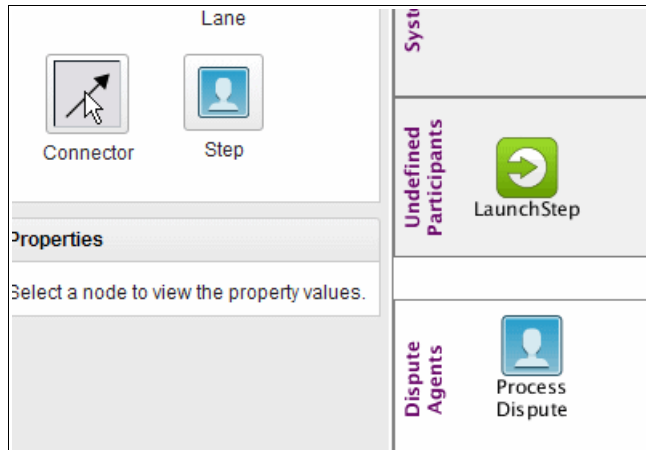


Figure 10-60 Connector icon in step palette

16. The interface uses an elastic band effect when connecting the icons, but the resulting graphic becomes a series of curves connecting the two steps as seen in Figure 10-61.

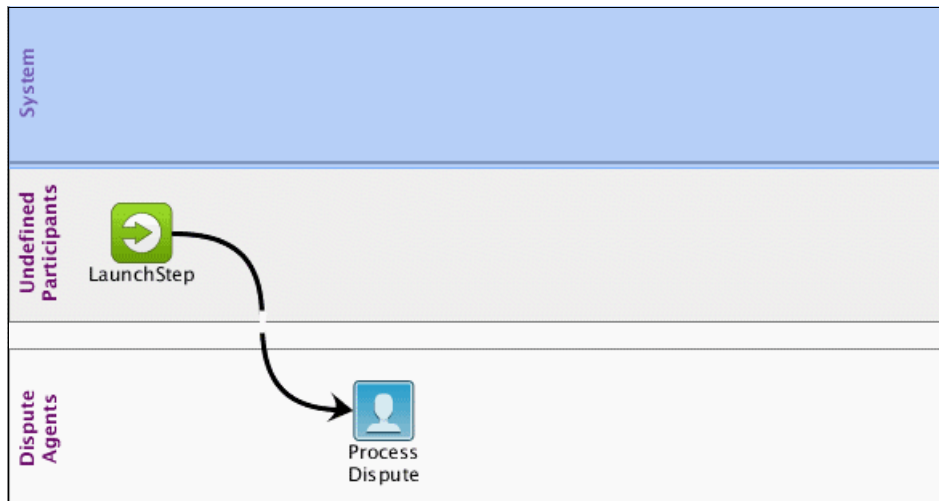


Figure 10-61 Connecting the steps

17. Add a new step named **Phone Customer With Result** to the Customer Services swimlane. Configure the step with the same parameter properties and attachments as defined for the **Process Dispute** step.

Click **OK** in the step properties to ensure the changes are applied.

18. Draw a connector from the **Process Dispute** step to the **Phone Customer With Result** step.

Results should look similar to that shown in Figure 10-62.

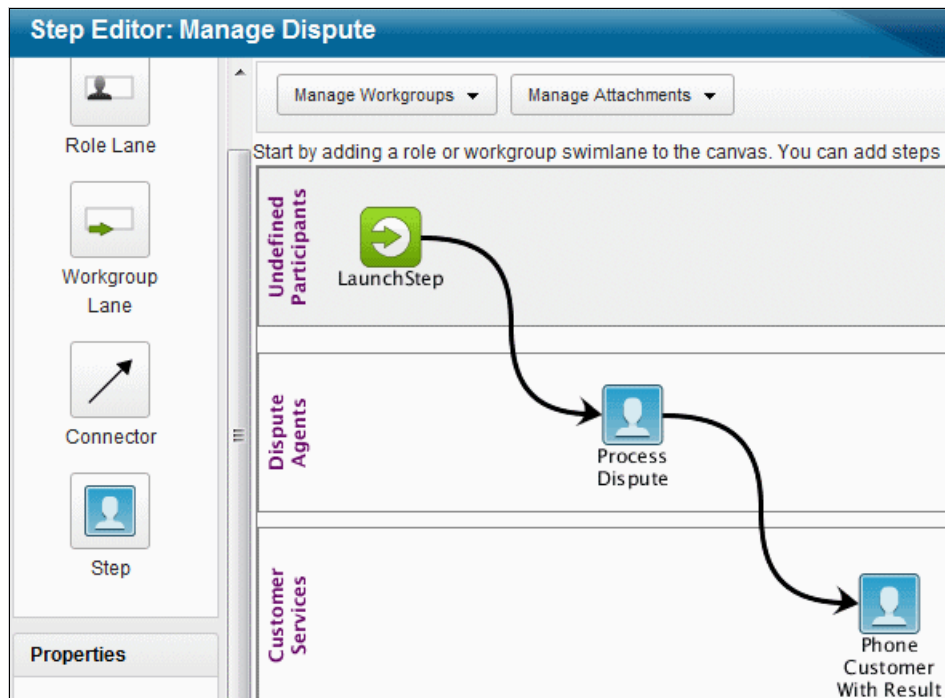


Figure 10-62 Steps configured and connected

19. Click **Apply** to apply the changes, then click **Validate** to validate the task and click **Close**. If there are any validation errors they will appear in the bottom left of the window.

Note: Neither **Apply** nor **Validate** save the diagram. Make sure to click **Save** after exiting the Step Editor.

20. Click **Save** and then **Close**, then **Save and Close** to save and close the solution.

Important: Make sure you have closed the solution in Case Builder before attempting to open it in Process Designer. If you have not closed the solution, Process Designer will display a warning window that the solution is checked out.

21. After creating the Manage Disputes task diagram, make the initiating attachment a single attachment:
 - a. Log into Workplace XT and start the Process Designer applet by clicking **Tools → Advanced Tools → Process Designer**.
 - b. Open the solution by clicking **File → Solution → Edit**. Select the solution definition from the design object store: **IBM Case Manager folder → Solutions → Your solution folder**. Open the Solution Definition file.
 - c. If your Manage Dispute task does not display in the map, select it from the **View → Workflows** menu.
 - d. Click the **Attachments** tab in Workflow properties.
 - e. Click to clear the array check box for the attachment.
 - f. Click the **Validate Workflow Collection** icon, then click **File → Solution**, and then click **Save and Close**.

Important: Make sure you have closed the solution in Process Designer before attempting to open it in Case Builder. If you have not closed the solution, Case Builder will display a warning window that the solution is checked out.

10.6.2 Create the Customer Fraud Determination task diagram

To create a workflow diagram for the Customer Fraud Determination task, perform the following steps:

1. In Case Builder, in the Manage Solutions window, click the **Edit** link for your Credit Card Dispute solution.
2. Click the Case Type tab, open the case type, then click the Tasks area to continue configuring diagrams for the tasks.
3. From the Credit Card Dispute task window, open the step editor for the Customer Fraud Determination task by moving your cursor to the right of the task and clicking the **Step Editor** icon, located just below the **Edit Task** icon.
4. Create the attachment using the following steps:
 - a. Click **Manage Attachments** at the top of the step editor.
 - b. Click **Add Attachment**.
 - c. For the **Attachment Name** field, type CustomerCorrespondence (no spaces allowed).
 - d. For the **Prompt** field, type Customer Correspondence.
 - e. Click **OK** and **Close**.

5. Add a new role lane assigned to the **Dispute Supervisors** role.
6. Add a new step named Determine If Fraud to the Dispute Supervisors swimlane. Configure the step with the same parameter properties and attachments as defined for the **Process Dispute** step in “Create the Manage Dispute task diagram” on page 318. Draw a connector from the **LaunchStep** to the **Determine If Fraud** step. Results should look similar to that shown in Figure 10-63.

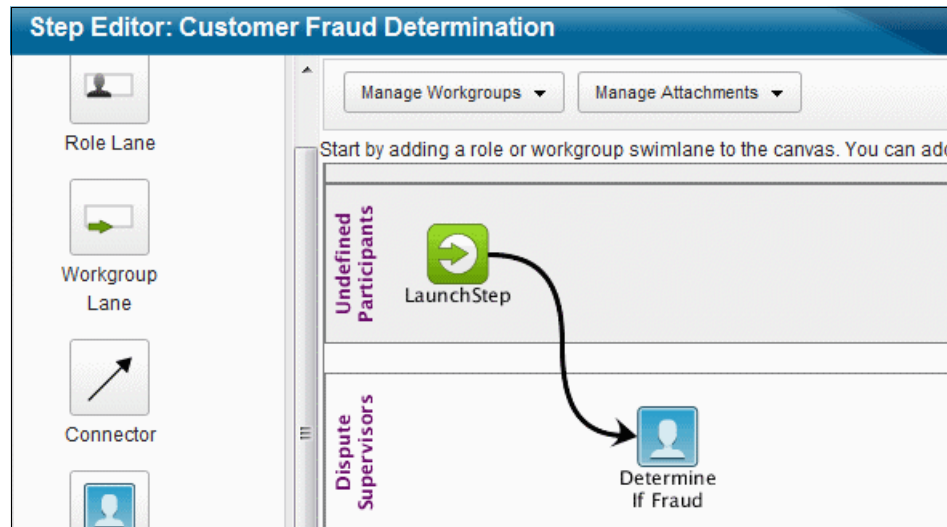


Figure 10-63 Configuring the Customer Fraud Determination task

7. To add responses to the **Determine If Fraud** step, perform the following steps:
 - a. Select the **Determine If Fraud** step in the diagram.
 - b. In the Step Properties window, click the **Edit** icon to the right of the Responses field.
 - c. Click **Add Response** to add a **No Further Action** response, then click **OK**. Add another response for **Suspected Fraud** and click **OK**. The result is shown in Figure 10-64 on page 331. Click **OK** at the bottom of the Response window to complete the response editing.
 - d. Click **OK** in the Step Properties window to ensure the changes are applied.

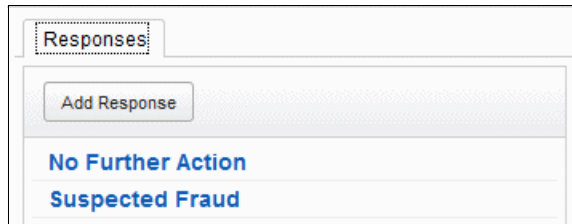


Figure 10-64 Adding responses to a step

8. Add a new role lane assigned to the Fraud Investigators role.
9. Add a new step named Fraud Investigation to the Fraud Investigators swimlane. Configure the step with the same parameter properties and attachments as defined for the **Process Dispute** step in “Create the Manage Dispute task diagram” on page 318. Results should look similar to that shown in Figure 10-65.

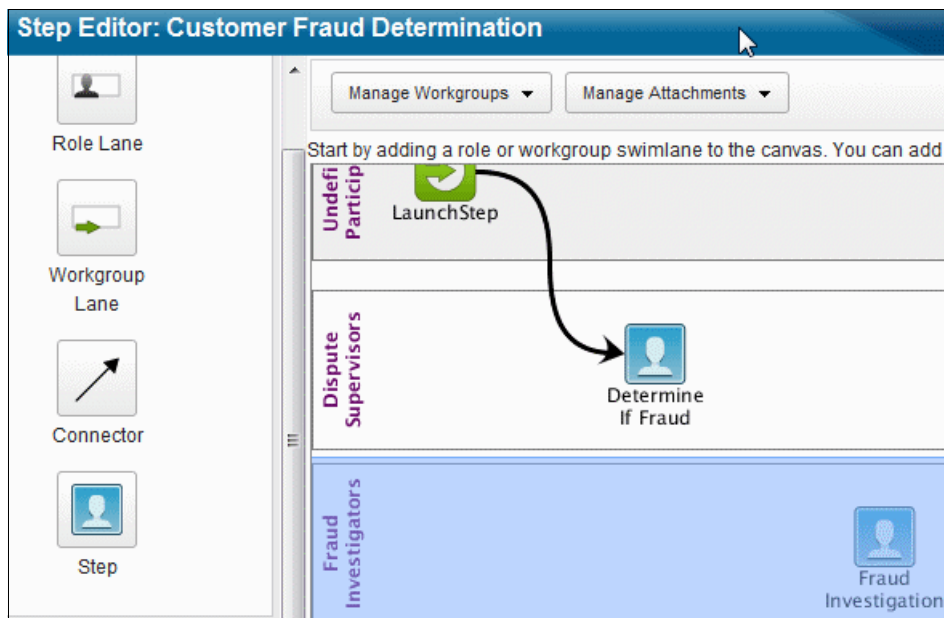


Figure 10-65 Adding the Fraud Investigation step

10. Draw a connector from the **Determine If Fraud** step to the **Fraud Investigation** step.
11. Select the connector you just added to the diagram. In the Connector Properties window, assign the name Suspected Fraud to the connector.

12. In the Connector Properties window, click the **Edit** icon to the right of the Responses field. Select the **Suspected Fraud** condition from the drop-down list as shown in Figure 10-66. Click **OK**.

Note: The work item will proceed to the **Fraud Investigation** step only if the **Suspected Fraud** response is chosen.

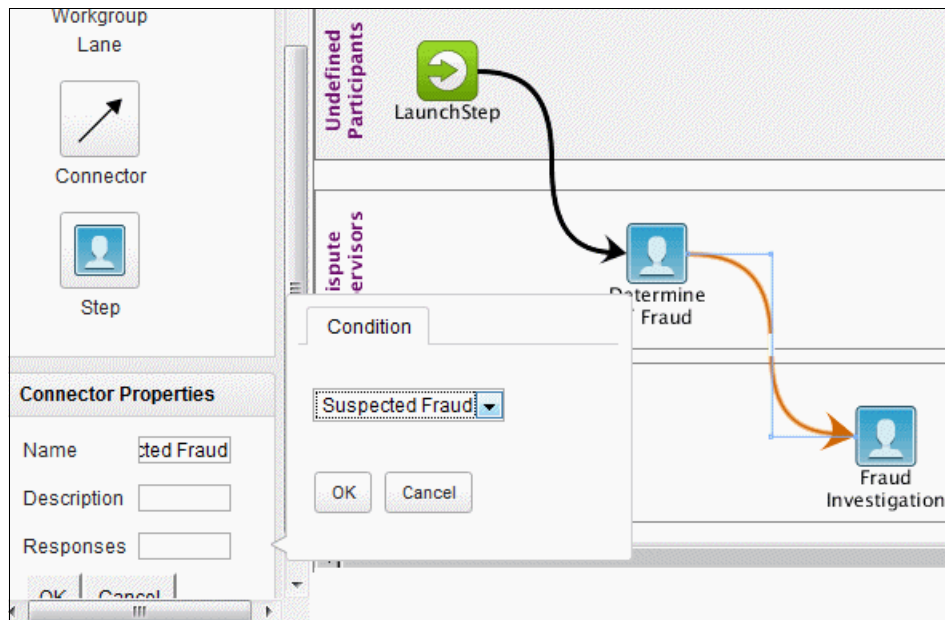


Figure 10-66 Setting a step response value

13. Click **OK** in the Connector Properties window. The resulting workflow is shown in Figure 10-67 on page 333.

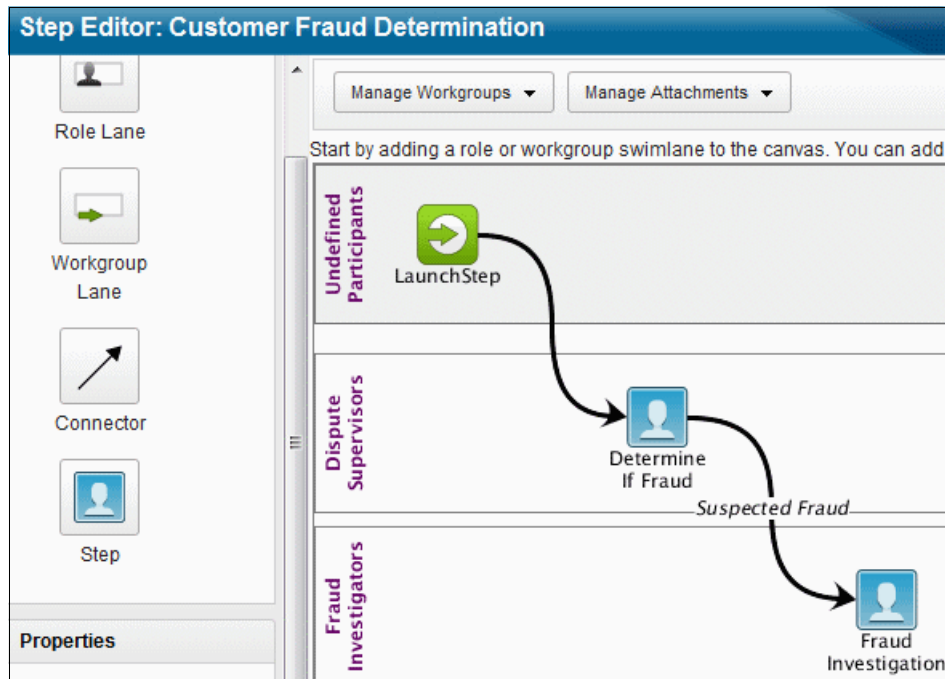


Figure 10-67 Completing the Customer Fraud Determination task

14. Click **Apply** to apply the changes, click **Validate** to validate the task, and then click **Close**. If there are any validation errors they will appear in the bottom left of the window.
15. After exiting the Step Editor, click **Save**.

Note: Neither **Apply** nor **Validate** save the diagram. Make sure to click **Save** after exiting the Step Editor.

10.6.3 Create the Vendor Fraud Determination task diagram

To create a workflow diagram for the Vendor Fraud Determination task, perform the following steps:

1. From the Credit Card Dispute task window, open the step editor for the Vendor Fraud Determination task by moving your cursor to the right of the task and clicking the **Step Editor** icon, located just below the **Edit Task** icon.
2. Create the attachment using these steps:
 - a. Click **Manage Attachments** at the top of the step editor.

- b. Click **Add Attachment**.
 - c. For the Attachment Name field, type CustomerCorrespondence (no spaces allowed).
 - d. For the Prompt field, type Customer Correspondence.
 - e. Click **OK** and **Close**.
3. Add a new role lane assigned to the **Data Analysts** role.
4. Add a new role lane assigned to the **Dispute Supervisors** role.
5. Add a new role lane assigned to the **Fraud Investigators** role.
6. Add a step named Content Analytics to the Data Analysts swimlane and set the properties and attachments values as in previous steps. Connect the **LaunchStep** to the **Content Analytics** step.
7. Add a step named Determine Investigation Required to the Dispute Supervisors swimlane. Add the responses **No Further Action** and **Investigate**. Connect the **Content Analytics** step to the **Determine Investigation Required** step.
8. Add a step named Investigate to the Fraud Investigators swimlane. Connect the **Determine Investigation Required** step to the **Investigate** step. In the Connector Properties window, assign the name Investigate to the connector and set the Response field value to **Investigate**.

The completed workflow diagram should look similar to that shown in Figure 10-68 on page 335.

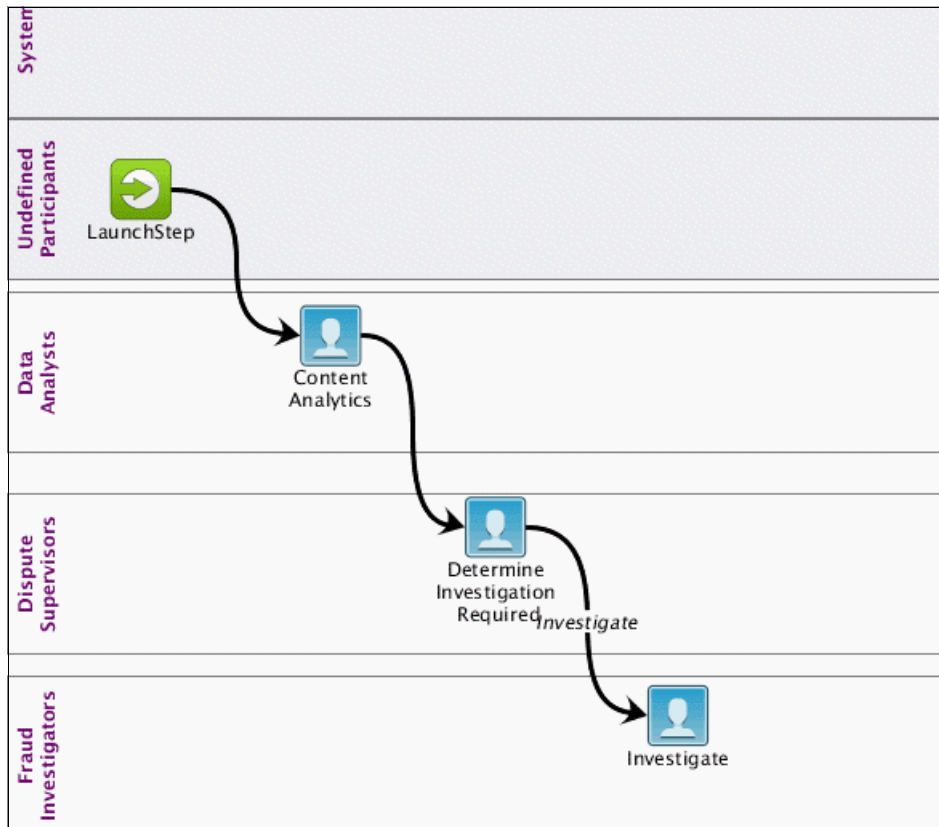


Figure 10-68 The Vendor Fraud Determination step editor window

9. Click **Apply** to apply the changes, click **Validate** to validate the task, and then click **Close**. If there are any validation errors they will appear in the bottom left of the window.
10. After exiting the Step Editor, click **Save**.

Note: **Apply** and **Validate** do not save the diagram. Make sure to click **Save** after exiting the Step Editor

10.6.4 Create the diagram for the Process Charge Back task

To create a workflow diagram for the Process Charge Back task, perform the following steps:

1. From the Credit Card Dispute task window, open the step editor for the Process Charge Back task by moving your cursor to the right of the task and clicking the **Step Editor** icon, located just below the **Edit Task** icon.
2. Create the attachment using the following steps:
 - a. Click **Manage Attachments** at the top of the step editor.
 - b. Click **Add Attachment**.
 - c. For the Attachment Name field, type CustomerCorrespondence (no spaces allowed).
 - d. For the Prompt field, type Customer Correspondence.
 - e. Click **OK** and **Close**.
3. Add a new role lane assigned to the Dispute Agents role.
4. Add a step named Process Charge Back to the Dispute Agents swimlane and set the properties and attachments values as in previous steps. Connect the LaunchStep to the Process Charge Back step.
5. Click **Apply** to apply the changes, click **Validate** to validate the task, and then click **Close**. If there are any validation errors they will appear in the bottom left of the window.
6. After exiting the Step Editor, click **Save**.

Note: **Apply** and **Validate** do not save the diagram. Make sure to click **Save** after exiting the Step Editor

10.7 Save and validate the Credit Card Dispute solution

To complete the solution, save and validate the solution using the following steps:

1. From the Case Type window, click the **Save** button as shown in Figure 10-69 on page 337 to save the task configurations.

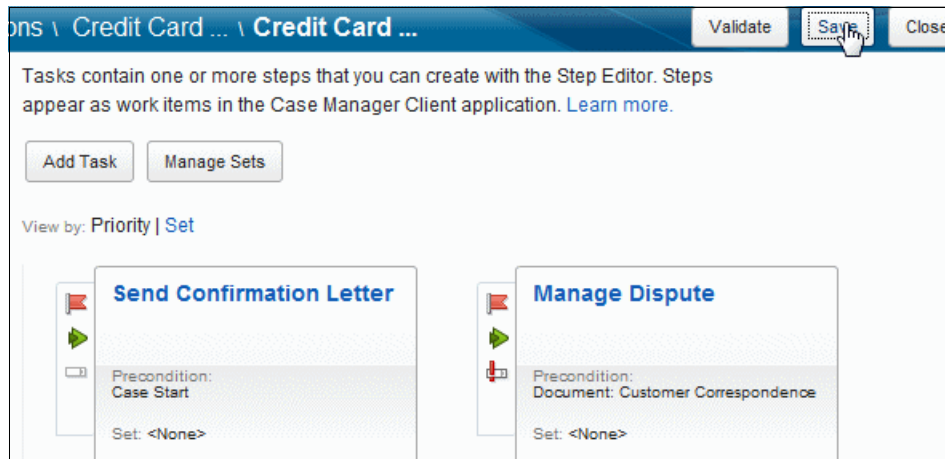


Figure 10-69 Saving the tasks

2. Click **Validate** to validate the solution.

Note: Validation performed here is only for this Case type and its collection of Tasks. The validation is not for the entire solution.

3. Click **Close** to close the case type.
4. From the Credit Card Dispute solution page, click the **Save and Close** button to save the solution.

The solution is now complete. After building the solution, you need to deploy it in an environment before you can use it. See the following chapters for deployment and usage instructions:

- ▶ Chapter 11, “Deploying and using the sample solution” on page 339
- ▶ Chapter 12, “Modifying a task with Process Designer” on page 401



Deploying and using the sample solution

In this chapter, we provide steps on deploying and using the Case Manager solution that was built in Chapter 10, “Building a sample solution” on page 279.

This chapter covers the following topics:

- ▶ Deploying a solution in a development environment
- ▶ Using the solution
- ▶ Deploying the solution to a new domain

11.1 Deploying a solution in a development environment

Deploying a solution in a development environment involves using IBM Case Manager Builder to deploy the solution to the target object store and then mapping the roles to users and groups. The solution is then ready to be used.

Solutions can be removed from the development environment target object store by using the **Reset Test Environment** button on the main window of IBM Case Manager Builder. However, this deletes then recreates the development target object store, and re-initializes the Process Engine region.

Figure 11-1 shows using the **Deploy** link to deploy the solution to the development environment target object store. The deployment is complete when the **Deploy** option becomes highlighted again. Make sure that the green **Logs** button is not replaced by a red **Errors** button. If there are errors, the deployment was not successful and the errors must be resolved before continuing. During deployment, status information is available in a drop-down list at the bottom of the window.

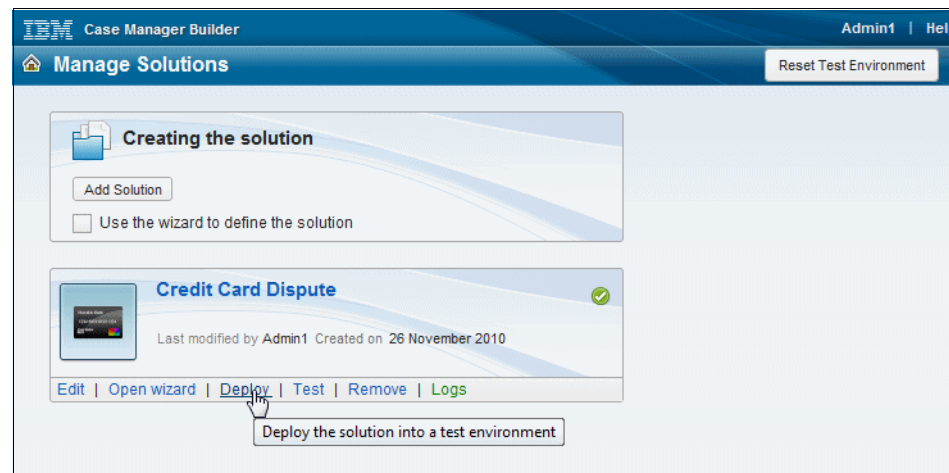


Figure 11-1 Deploying the solution to the development environment target object store

Test the deployed solution using the following steps:

1. Use the **Test** link (next to the **Deploy** link as shown in Figure 11-1).
2. The first time you log in to a newly deployed application, you will see a window asking to select which case management solution to access. Click **Credit Card Dispute** → **Work** to continue as shown in Figure 11-2 on page 341.

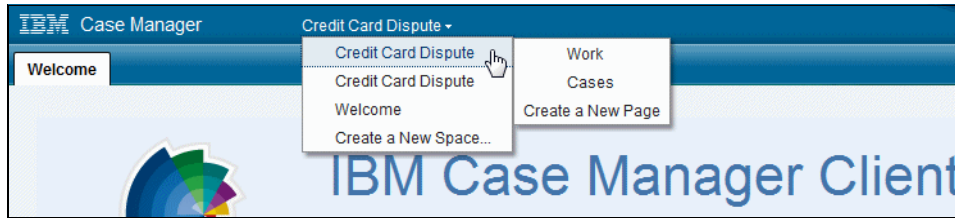


Figure 11-2 First time logging on

3. When first logging in after deployment, click the **Manage Roles** button as shown in Figure 11-3 to map the role names to users and groups. Groups are preferred because the members can be controlled through the directory service rather than by role mapping within IBM Case Manager Client.

Note: When testing in the development environment, the users (business analysts) can add their user login to each role so that they can act in the various roles and test the case without having to log on and off as each user's role.

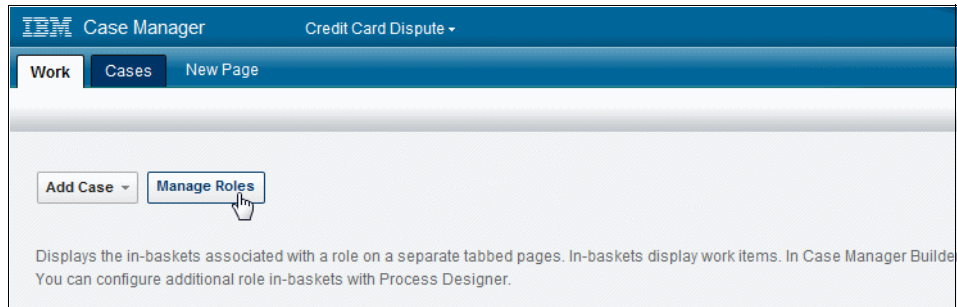


Figure 11-3 Managing Roles in IBM Case Manager Client

4. For each of the roles on the left hand side of the Manage Roles window, click the **Add Members** button as shown in Figure 11-4 on page 342 to add the required members.

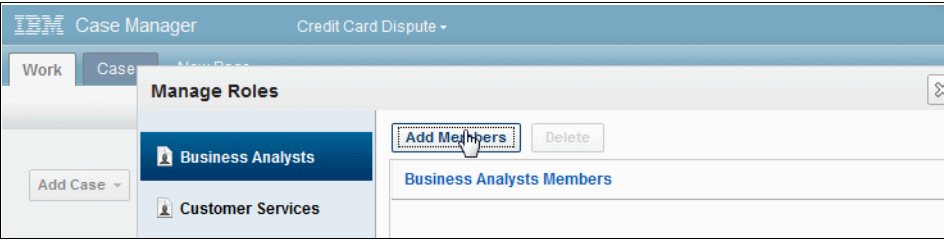


Figure 11-4 Adding members to roles

5. After you have located the user or group you want to assign to the role, select the user or group and click **Add Selected**, and then click **OK** as shown in Figure 11-5.

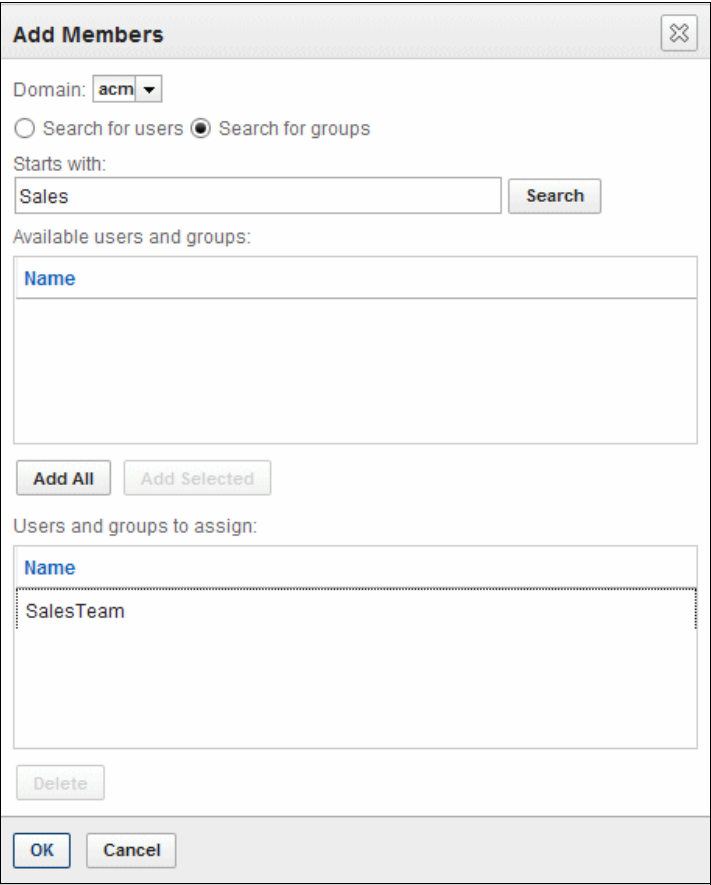


Figure 11-5 Adding members to roles

Configure all the roles with users or groups. For our sample solution, the role mappings are shown in Table 11-1. The users and groups might be different for your environment depending on your directory services configuration.

Table 11-1 Sample solution user and group assignments

Role Name	LDAP user/group
Business Analysts	BusinessA
Customer Services	CSRep
Data Analysts	BankDA
Dispute Agents	DisputeAS
Dispute Supervisors	SeniorDA
Fraud Investigators	CreditP

6. Log out of the IBM Case Manager Client application.

Note: In order for role assignments to become effective, you must log out and log back into the IBM Case Manager Client prior to using the solution.

Starting with 5.0 Fixpack1, you can click **Refresh** instead of having to log out and log back in.

11.2 Using the solution

This section covers using the solution developed in Chapter 10, “Building a sample solution” on page 279. Although there are many permutations of how a case might progress, the one depicted here follows the following steps:

1. The Customer Services representative receives a phone call from a customer complaining of an incorrect credit card transaction. The representative adds a case to the case management solution.
2. A letter is automatically sent to the customer through the Send Confirmation Letter task, notifying them of the case number and requesting further information (such as receipts) to support the dispute claim.
3. The Manage Dispute task also automatically starts, but waits on the precondition for a document of the Customer Correspondence class being added to the case.
4. The document arrives and the case is sent to the Dispute Agents in-basket. He allows the amount to be refunded to the customer's credit card account

(through the Process Charge Back manual task), but after searching previous disputes lodged by the customer, he decides to manually initiate the optional Customer Fraud Determination task.

5. The case then goes to the Customer Services in-basket, and the CSRep phones the customer to tell them their dispute has been settled.
6. Meanwhile, the case is sent to the Dispute Supervisor's in-basket, who then makes a determination on whether the case should go to the Fraud investigation department. He doesn't, and therefore the case is now closed.

Note: There was a mutually exclusive optional task named Vendor Fraud Determination that could have been chosen if the vendor was suspected, in which case the case would go to the Data Analysts who will use Content Analytics to search for indications the vendor is acting fraudulently. The Dispute Agent will update the comments and pass that back to the Dispute Supervisor, who will then make a decision on whether to pass that on to the Fraud Investigators.

11.2.1 Launching a case using the Customer Services role

To run the solution and launch a case, perform the following steps:

1. Log in to IBM Case Manager Client as the CSRep user (the Customer Services role). Select the Credit Card Dispute solution space. Click the **Add Case** button and select **Credit Card Dispute** as shown in Figure 11-6.

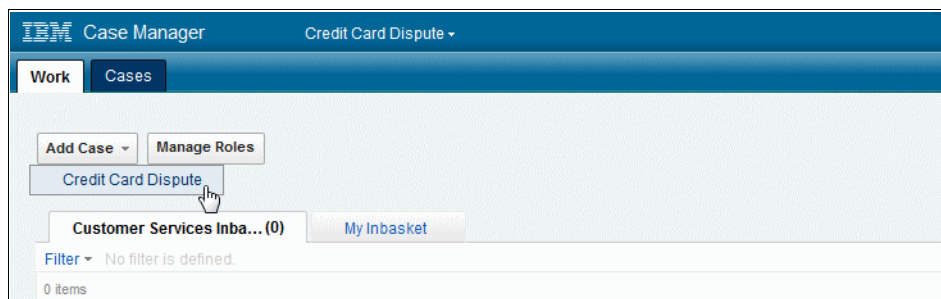


Figure 11-6 Adding a case

2. Fill in the case properties. Use 222-3333-444 as the credit card number so that we can search for this case. Click the **Add** button to create the case as shown in Figure 11-7 on page 345.

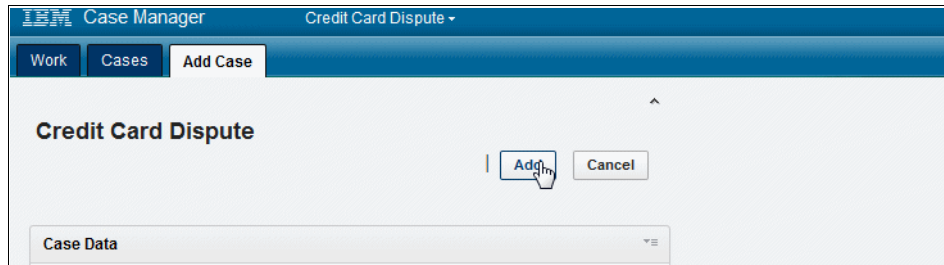


Figure 11-7 Add a Credit Card Dispute case

3. Click the **Cases** tab and perform a case search to see what is happening with the tasks.
 - a. Click the **Advanced Search** button.
 - b. Click **Add search criteria**.
 - c. Select **Credit Card Number** from the drop-down menu.
 - d. Select an operator. The string type default is “starts with”.
 - e. Enter search criteria for the Credit Card Number, for example 222 (if using “starts with” operator) or 222-3333-444 (if using “is equal to” as shown in the figure), and click **Search** as shown in Figure 11-8 on page 346.

Work

Add

Search

Case

%

Search

Case type: All

Match criteria: All

Case ID:

Case state: Working

Date added between: and

Added by: Select Clear

Date modified between: and

Modified by: Select Clear

User-specified properties

Credit Card Number is equal to 222-3333-444

Add search criteria

Search Cancel

Figure 11-8 Using the Advanced Search function

- Click the newest case returned as shown in Figure 11-9 on page 347.

Note: You might need to set the search direction option to **Descending** if the number of returned items is large.

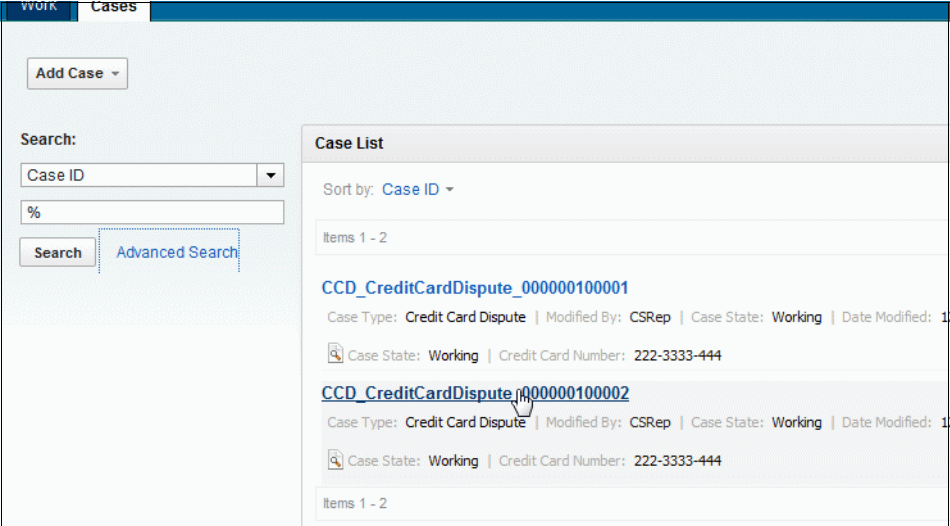


Figure 11-9 Search results

5. The case details are displayed as shown in Figure 11-10.

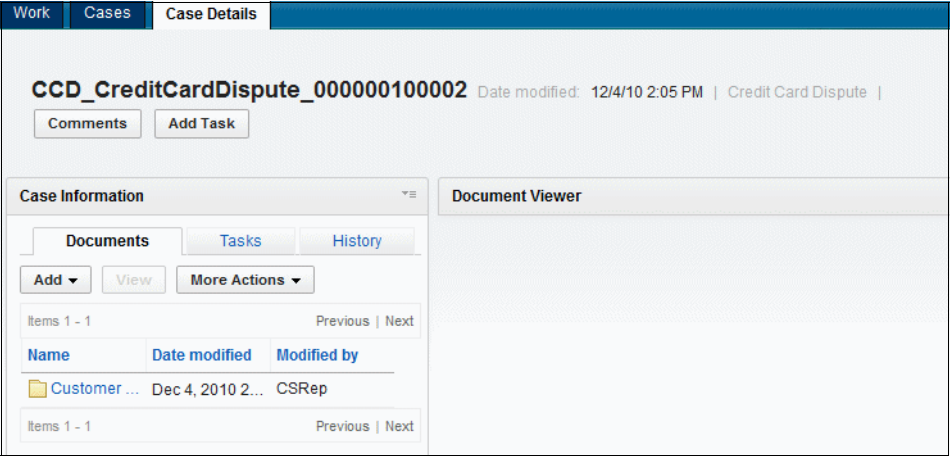


Figure 11-10 Case Details

6. In the left pane, click the Tasks tab to see the status of the tasks. The task status is noted by the color and type of icon listed for each task as shown in Figure 11-11 on page 348.

Note: The Manage Dispute task is started but paused (thus the ... symbol). It is waiting on the precondition of the Customer Correspondence document being added to the case.

The Send Confirmation Letter task is completed as indicated by the green check mark. It is an empty workflow at the moment, so it completes immediately. In a later chapter we will add a component step to that task.

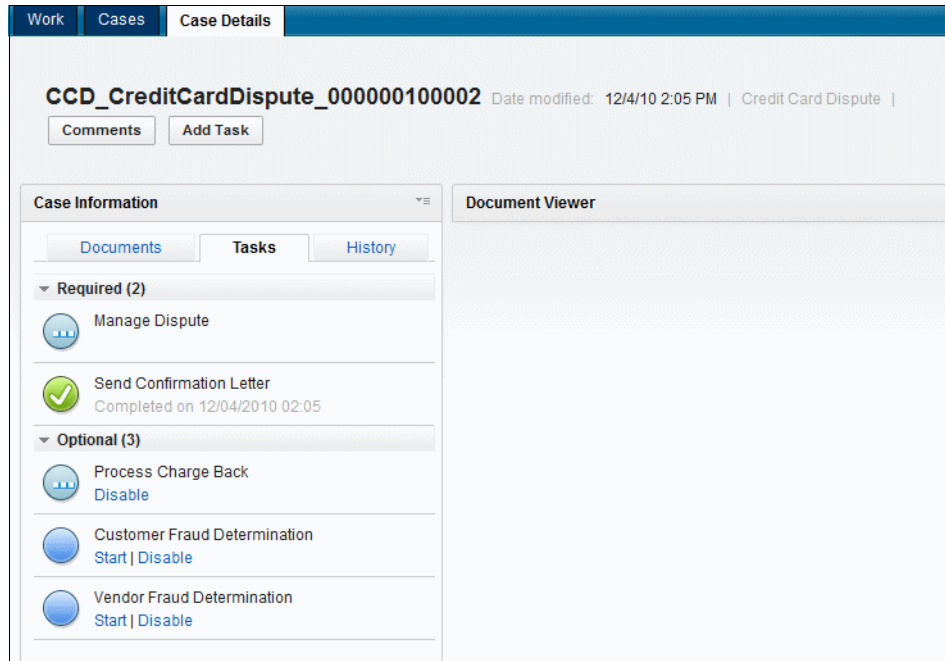


Figure 11-11 Tasks pane in the Case Details tab

7. Add a Customer Correspondence document to the case using the Documents tab in the Case Information window of the Case Details tab. See Figure 11-12 on page 349.

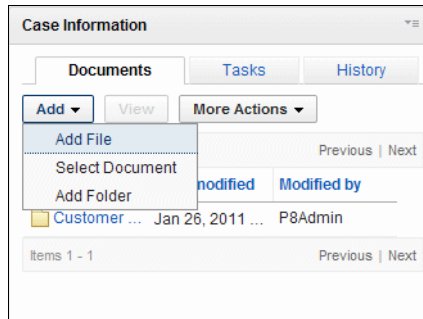


Figure 11-12 Add document to folder

8. Select the Customer Correspondence Folder, then click **Add**, and select **Add File**. The Add window will display.
9. Browse for and select the file, then click **Next**. See Figure 11-13.

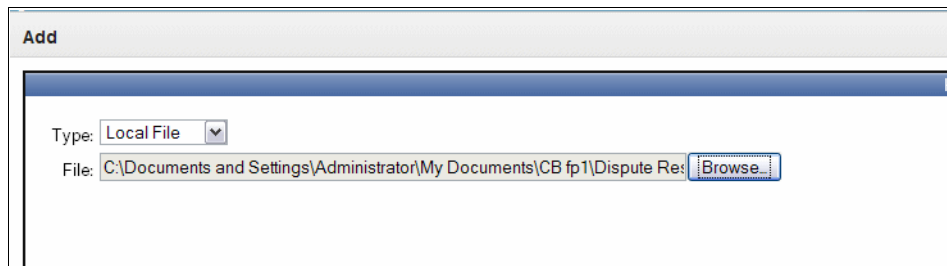


Figure 11-13 Browse for document

10. Click the Class drop-down and select the Customer Correspondence document class. Click **OK** as shown in Figure 11-14 on page 350.

Note: Make sure to place the document in the Customer Correspondence folder, as this is where it was intended to go from the solution design. It can be added anywhere under the case folder to trigger the precondition.

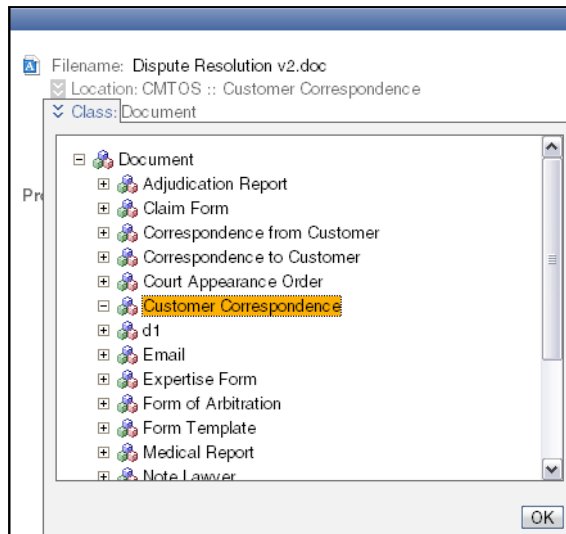


Figure 11-14 Select Customer correspondence document class

11.Fill in the properties, then click **Add**. See Figure 11-15.

Figure 11-15 Fill in document properties

12.A summary displays as shown in Figure 11-16 on page 351. Click **OK**.



Figure 11-16 Document added summary

13. While still in the Case Details tab, close the Case by clicking the **Close** button located above the Case Data pane.

11.2.2 Processing a case using the Dispute Agents role

Continue to process the case as the Dispute Agent and determine if there is vendor or customer fraud using the following steps:

1. Log off and log back into IBM Case Manager Client as the user DisputeAS (the Dispute Agents role).
2. The workitem is now in the Dispute Agents in-basket. Click the workitem as shown in Figure 11-17 to see the work details.

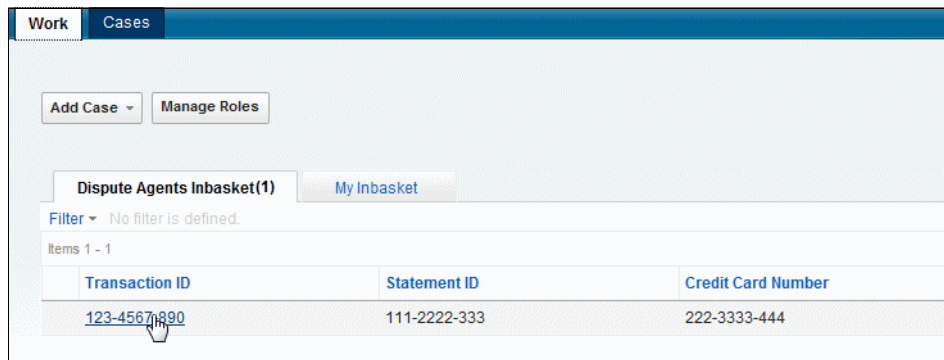


Figure 11-17 Workitem in Dispute Agents in-basket under Manage Dispute task

3. Figure 11-18 on page 352 shows the Work Details of the case. Click the **Open Case Details** link located in the Case Information pane.

Note: The left pane contains the Case Data. The middle pane has a Document Viewer for the case attachments. The upper right pane contains the Case Information. Below the Case Information pane is Attachment pane.

Work
Cases
Add Case
Work Details
New Page

Process Dispute

Manage Dispute
[View Instructions](#)

Comments

Case Data

Transaction ID:
99923432
Statement ID:
134155
Credit Card number:
222-3333-444
Date Received:
1/2/2011 12:00 AM
Dispute Status:
Dispute Logged
Amount:
98.09
☐ Charge Back Processed

Document Viewer

Displays documents that are stored in Content Engine.

Case Information

Case ID: CCD_CreditCardDispute_000

Summary
Docu

Transaction ID:
99923432
Statement ID:
134155
Date Received:
1/2/2011 12:00 AM
Amount:
98.09
Case ID:
CCD_CreditCardDispute_000
Case type:

Attachment

View
More Actions

Customer Correspondence
figure 10-67-cc.JPG

Figure 11-18 Work Details

- Click the **Tasks** tab to see the current state of the case tasks as shown in Figure 11-19 on page 353.

Note: It can be seen that the Send Confirmation Letter task has completed and the Manage Dispute task is in progress. The three optional tasks have not been started.

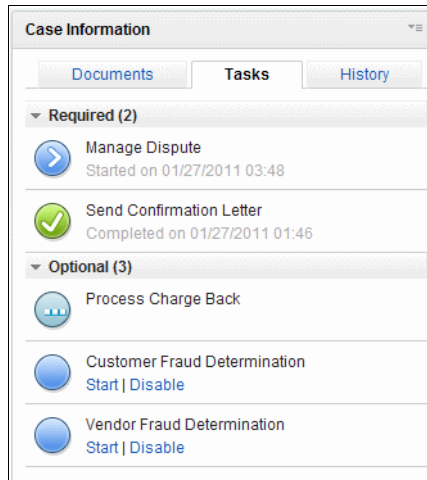


Figure 11-19 Case Details Tasks

5. As the Dispute Agent, initiate a charge back to the user's account by changing the value of the Dispute Status field to Charge Back Processed in the Case Data pane as shown in Figure 11-20 on page 354 using the following steps:
 - a. Click the **Edit** button in the Case Data pane.
 - b. Select Charge Back Processed from the Dispute Status drop-down menu.
 - c. Click the **Save** button.

Note: This launches the Process Charge Back task, which is triggered by the precondition Dispute Status is equal to Charge Back Processed.

Case Data

Save

Cancel

Transaction ID:

99923432

Statement ID:

134155

Credit Card number:

222-3333-444

Date Received:

1/2/2011

12:00 AM

Dispute Status:

Charge Back Processed

Amount:

98.09

☐ Charge Back Processed

Figure 11-20 Processing the charge back

- Click **Close** in the Case Details tab, then click the Open Case Details link again and note the changes to the task status as shown in Figure 11-21. The Process Charge Back task has changed from the paused state to the run state.

Case Information

Documents

Tasks

History

Required (3)

Manage Dispute

Started on 01/27/2011 03:48

Process Charge Back

Started on 01/27/2011 05:49

Send Confirmation Letter

Completed on 01/27/2011 01:46

Optional (2)

Customer Fraud Determination

Start | Disable

Vendor Fraud Determination

Start | Disable

Figure 11-21 Process Charge Back task status

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11.2.3 Processing an optional task

Before completing the step item, the Dispute Agent decides to escalate the case using the Customer Fraud Determination task, as he noticed while searching on the customer's credit card that they have lodged two disputes within a few days, one of them quite large.

To process an optional task, perform the following steps:

1. From the Case Details tab, select the Tasks tab.
2. Click the **Start** link located under the Customer Fraud Determination task as shown in Figure 11-22.
3. Click **Yes** in the **Are you sure that you want to start the task?** confirmation window.

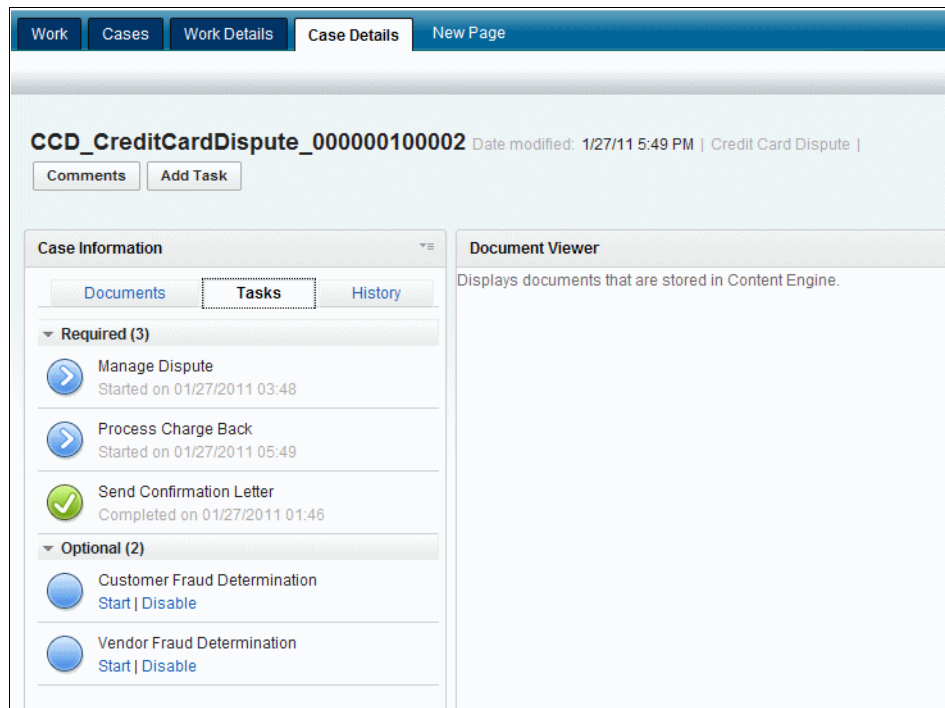


Figure 11-22 Starting the optional Customer Fraud Determination task

4. It can be seen from the Tasks tab as shown in Figure 11-23 on page 356 that the Customer Fraud Determination task is now running. Also notice that the Vendor Fraud Determination task is now disabled, as it was configured to be mutually exclusive with the Customer Fraud Determination task.

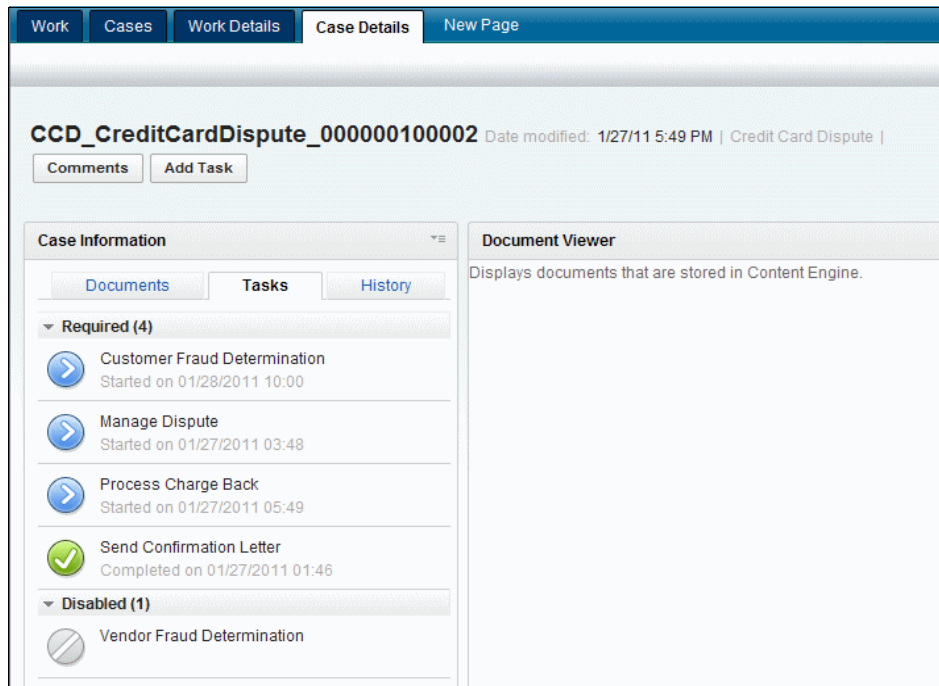


Figure 11-23 Customer Fraud Determination task now running

11.2.4 Completing the case

The Dispute Agent now goes back to the Work Details tab to complete the workitem.

1. Click the **Complete** button above the Case Information pane to complete the workitem as shown in Figure 11-24 on page 357.

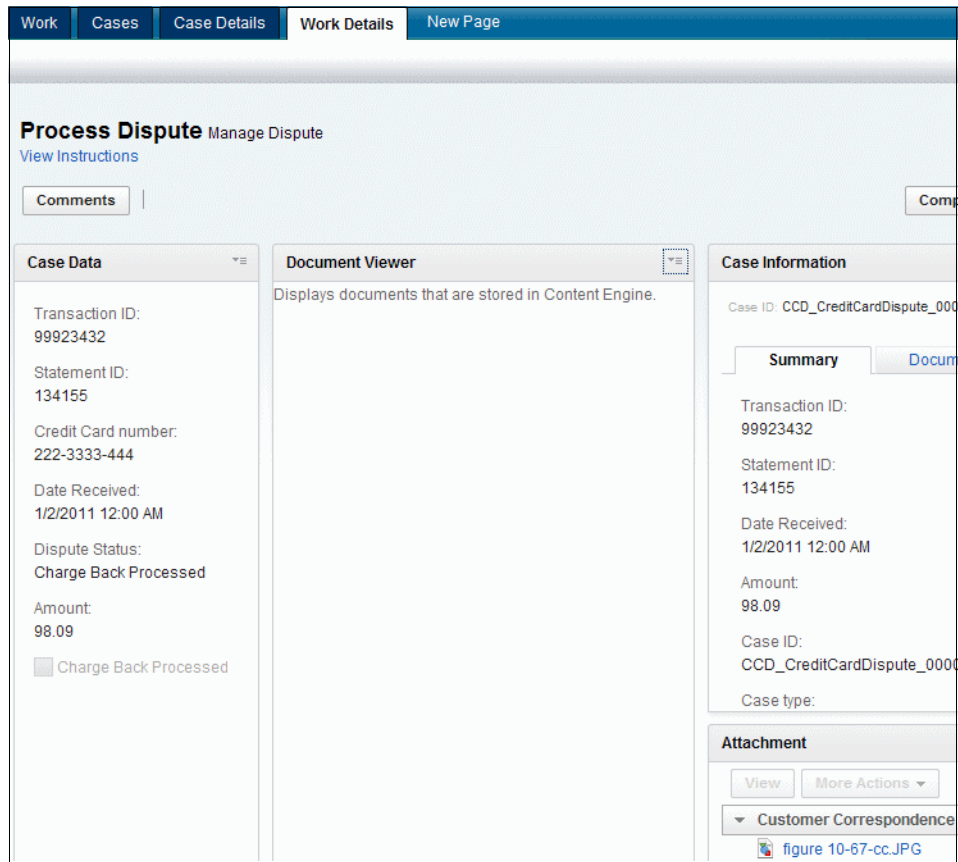


Figure 11-24 Dispute Agent completing the work item

2. Log out and log back into the IBM Case Manager client as CSRep (Customer Services role).
3. The Customer Services in-basket now has a workitem for the representative to phone the customer with the results of their dispute and then complete the Manage Dispute Task.
4. Click the transaction to open the workitem as shown in Figure 11-25 on page 358.

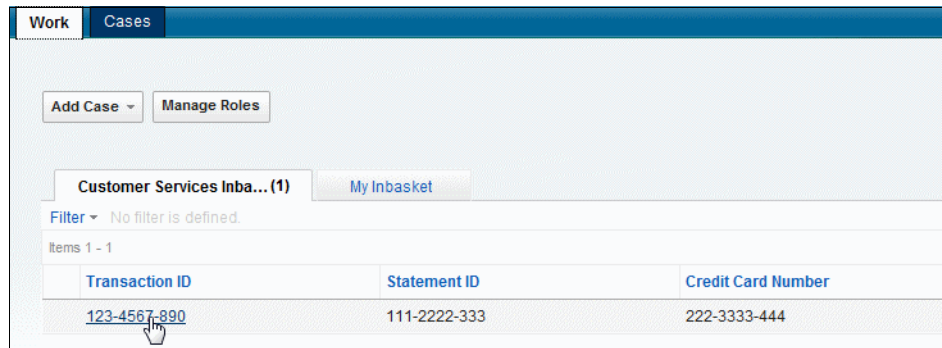


Figure 11-25 Workitem in Customer Services in-basket under Manage Dispute task

5. The Work Details page is displayed. Click the **Complete** button.
6. Search for the case under the Cases tab.
7. Notice in Figure 11-26 that the Case State is still **Working**, and not yet completed, even though the Manage Dispute task should have finished with the Customer Services representative phoning the customer with the result of their dispute claim.

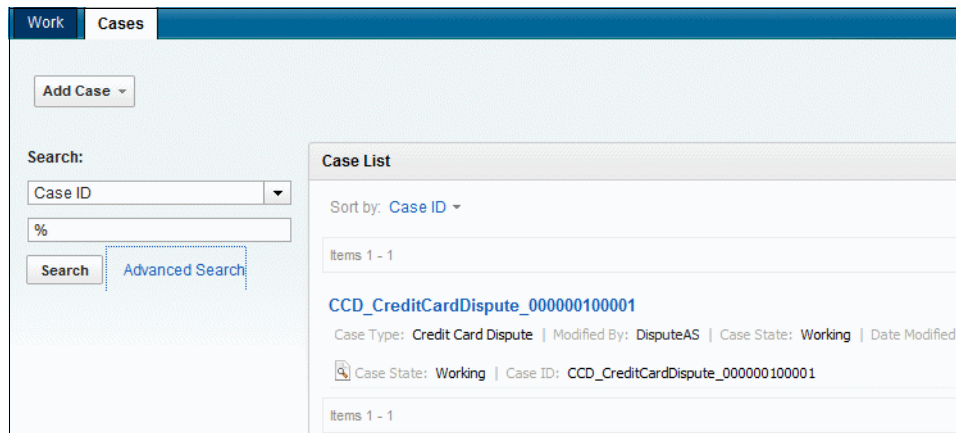


Figure 11-26 Searching to see the state of the case

8. Click the case to open it, and select the **Tasks** tab. Note in Figure 11-27 on page 359 that the Manage Dispute task is complete. The Dispute Advisor also ran the Process Charge Back manual task, which is also complete, and the Customer Fraud Determination task, which is still running.

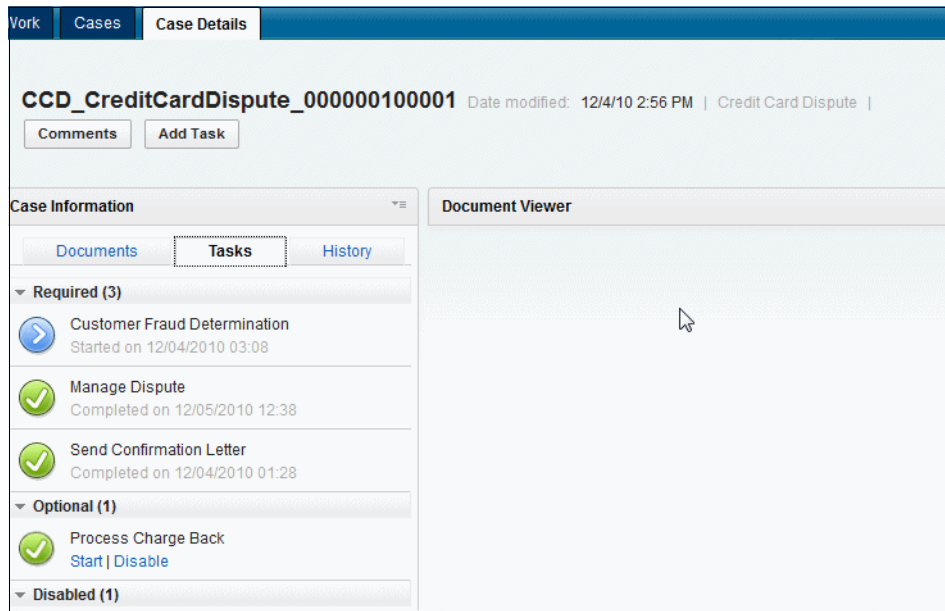


Figure 11-27 Case Tasks status

9. Log out and log in as SeniorDA (the Dispute Supervisors role).
10. A workitem belonging to the Customer Fraud Determination task is now in the Dispute Supervisors in-basket as shown in Figure 11-28.

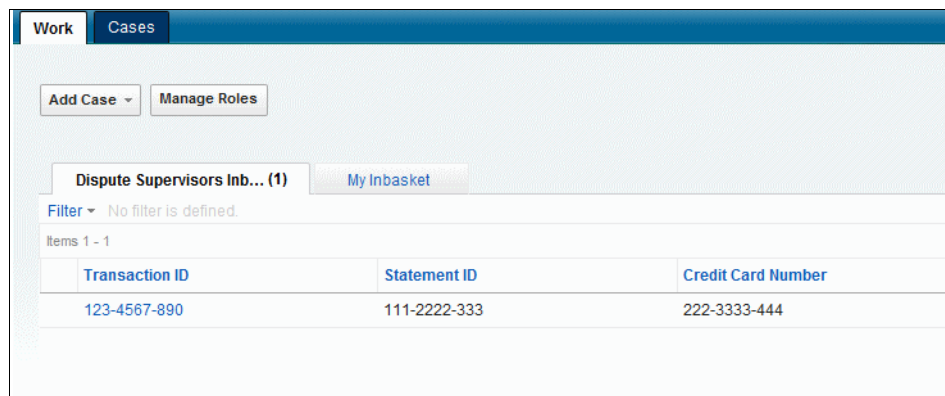


Figure 11-28 Work item in Dispute Supervisors in-basket in Customer Fraud Determination task

11. Open the workitem and select the **No Further Action** response. This will complete the Customer Fraud Determination task.

12. Search for the case again and look at the Case Status. Notice that, as shown in Figure 11-29, that the Case Status is now set to Complete.

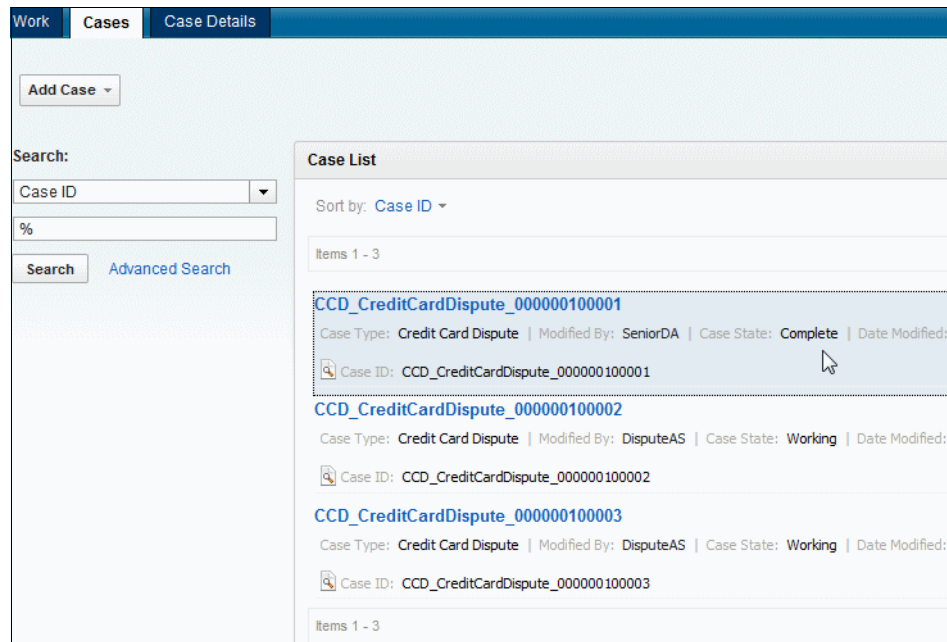


Figure 11-29 Case status is now complete

13. Open the case and look at the tasks status under the Tasks tab. Note as shown in Figure 11-30 on page 361 that all tasks are now complete and the case is 'closed'.

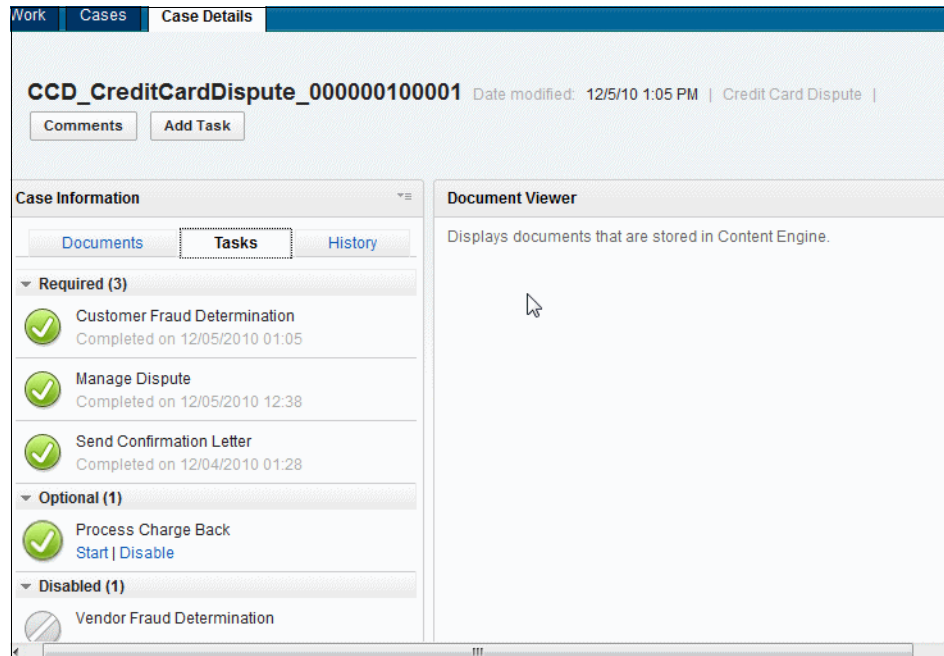


Figure 11-30 All tasks are now complete

11.3 Deploying the solution to a new domain

Deploying the solution to a new production domain consists of a number of steps. This differs from deploying a solution to a development environment for two reasons:

- ▶ The production environment is in a separate P8 domain.
- ▶ IBM Case Manager Builder is not installed in production environments.

Note: Deploying into a production domain is typically done by a Content Engine administrator, and not by the user who developed the solution.

The steps to deploy a solution from the development (source) domain to a new production (destination) domain include the following:

1. Export the mashup pages from the source mashup server to the source Content Engine to ensure they are part of the solution package. This is done using the Case Manager Administration Client.

2. Use FileNet Deployment Manager to move the solution package to the destination domain. Begin by creating in FileNet Deployment Manager the source and destination environments with appropriate CE connection information to access the desired source and destination CE servers.
3. Retrieve the data, principal, and service half-maps from both the source and destination servers using FileNet Deployment Manager. They are referred to as half-maps as together they make up the complete mapping of the data (the solution package), security principals (users and groups that are used to secure the solution package in the IBM Case Manager's design object store, not the users of ACM) and service data (for example, web service parameters).
4. Using FileNet Deployment Manager, create and save an export manifest (an XML file) of the solution package data from the development environment's IBM Case Management's design object store. The export operation uses the export manifest file to produce a deploy dataset of exported objects.
5. Use the FileNet Deployment Manager's Convert operation to use the half maps to convert the objects in the export files so they can be used for import in the destination object store.
6. Optionally, analyze the formatted export data using FileNet Deployment Manager to check for any errors or inconsistencies.
7. Using FileNet Deployment Manager at the destination environment, import the converted assets into the destination design object store.
8. Use Case Manager Administration Client to deploy the solution from the production design object store to the production destination object store.

Note: There is more than one way to use FileNet Deployment Manager. The one we list in this chapter is to illustrate the procedure to deploy in different P8 domain.

The main steps are:

1. Prepare the assets (including export pages).
2. Export the assets using FileNet Deployment Manager from the source environment.
3. Import the assets using FileNet Deployment Manager to the destination environment.
4. Deploy the solution using Case Manager Administration Client.

11.3.1 Export mashup pages

First you must export the mashup pages used by the solution from the Mashup Center database to the source design object store. After these pages have been added to the solution package in the source design object store, they will then be available to be moved by FileNet Deployment Manager to the destination design object store later in this procedure.

1. Start the Case Manager Administration Client console using the command:

`/opt/IBM/CaseManagement/configure/configmgr`

The console is shown in Figure 11-31.

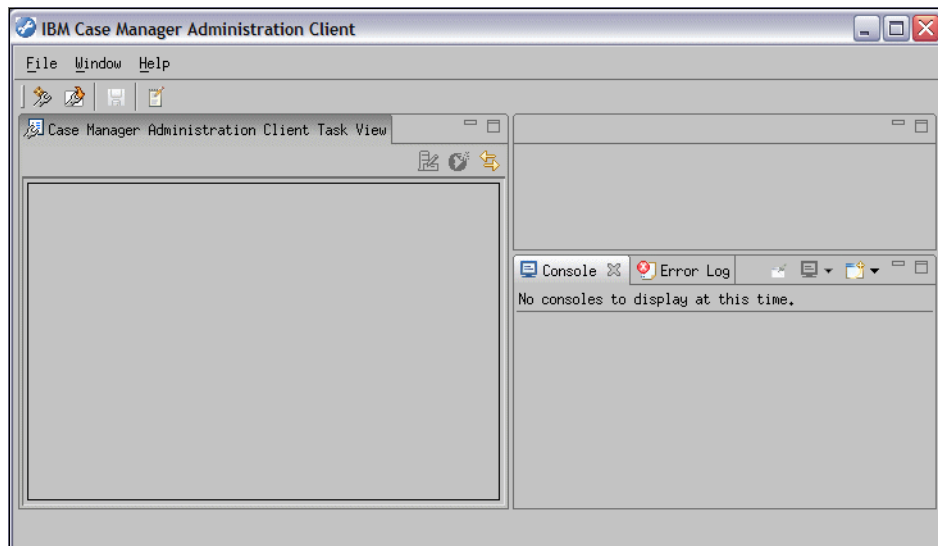
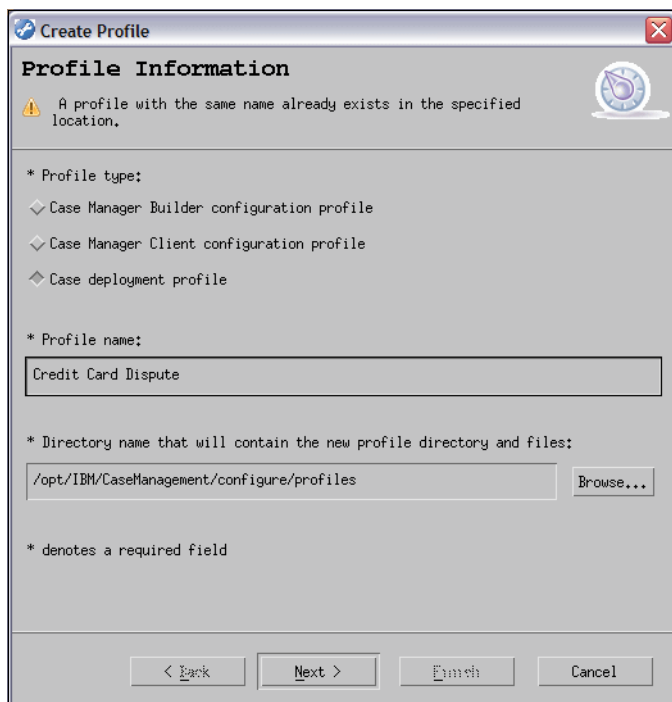


Figure 11-31 CMAC console

2. Select **File/Create Profile**. In the Create Profile window, select **Case deployment profile** then type a Profile name. Leave the default for **Directory name that will contain the new profile directory and files** as shown in Figure 11-32 on page 364. Click **Next**.



The image shows a 'Create Profile' dialog box with a title bar containing a gear icon and a close button. The main area is titled 'Profile Information' and contains a warning message: 'A profile with the same name already exists in the specified location.' Below this, there are three radio button options for 'Profile type': 'Case Manager Builder configuration profile', 'Case Manager Client configuration profile', and 'Case deployment profile'. A text field for 'Profile name' contains 'Credit Card Dispute'. Another text field for 'Directory name that will contain the new profile directory and files:' contains '/opt/IBM/CaseManagement/configure/profiles', with a 'Browse...' button to its right. A note at the bottom states '* denotes a required field'. At the bottom of the dialog are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Create Profile

Profile Information

⚠ A profile with the same name already exists in the specified location.

* Profile type:

- ☐ Case Manager Builder configuration profile
- ☐ Case Manager Client configuration profile
- ☐ Case deployment profile

* Profile name:

Credit Card Dispute

* Directory name that will contain the new profile directory and files:

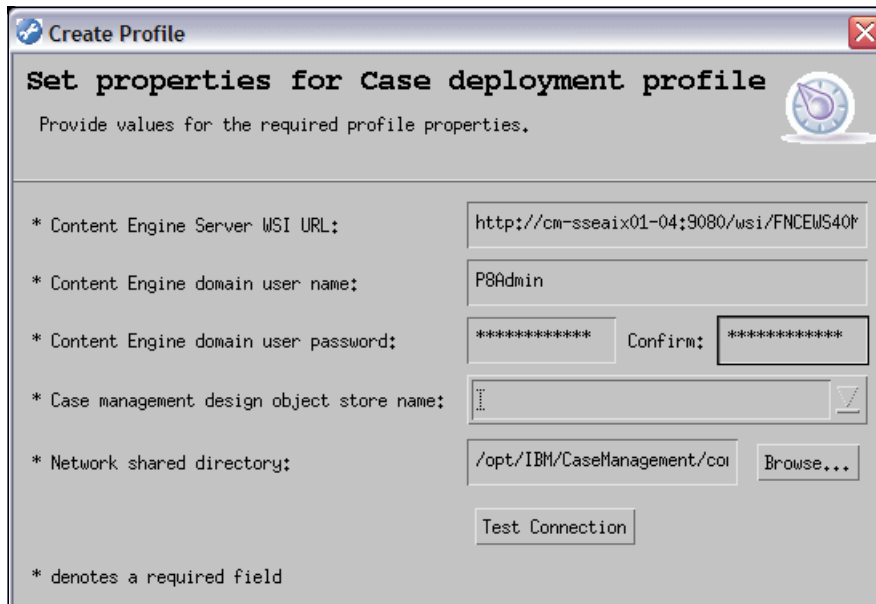
/opt/IBM/CaseManagement/configure/profiles

* denotes a required field

< Back Next > Finish Cancel

Figure 11-32 Creating the profile in CMAC

3. Type the Content Engine Server WSI URL, the domain user name and domain user password as shown in Figure 11-33 on page 365. Click the **Test Connection** button.



Create Profile

Set properties for Case deployment profile

Provide values for the required profile properties.

* Content Engine Server WSI URL:

* Content Engine domain user name:

* Content Engine domain user password: Confirm:

* Case management design object store name:

* Network shared directory:

* denotes a required field

Figure 11-33 Setting the properties for the Case deployment file

4. Verify the test connection to the Content Engine was successful as shown in Figure 11-34. Click **OK**.

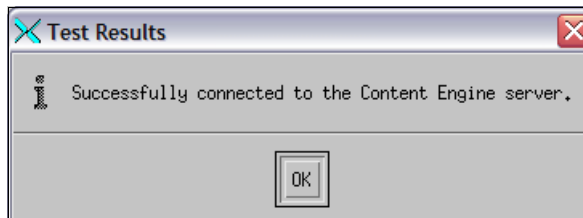


Figure 11-34 Successful test connection

5. Select the **Case management design object store name** from the drop-down list as shown in Figure 11-35 on page 366. Click **Next**.

Create Profile

Set properties for Case deployment profile

Provide values for the required profile properties.

* Content Engine Server WSI URL:

* Content Engine domain user name:

* Content Engine domain user password: Confirm:

* Case management design object store name:

* Network shared directory:

* denotes a required field

Figure 11-35 Selecting the design object store

- From the list of tasks to include in the profile, click to clear all the tasks (if they are selected) then select only the Export Pages task as shown in Figure 11-36. Click **Finish**.

Create Profile

Select the tasks that you want to include in this profile

The profile consists of individual configuration tasks that provide information about your IBM Case Manager environment.

☐ Generate Localization Resources

☒ Export Pages

☐ Create Case Manager API WAR file

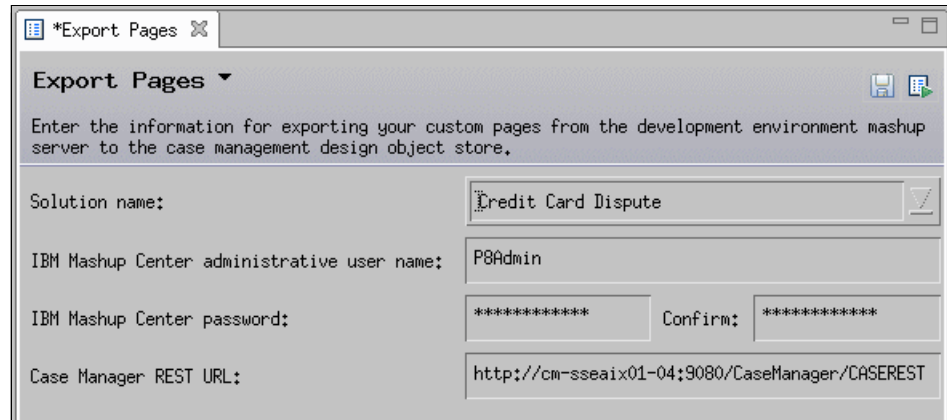
☐ Deploy Case Manager API

☐ Create Connection Definition

☐ Deploy Solution

Figure 11-36 Select the export task to run in CMAC

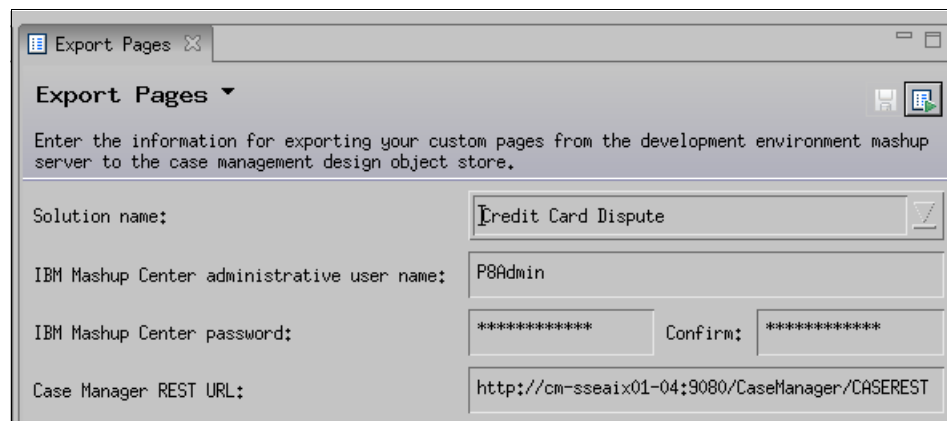
7. Double-click the Export Pages task to display the task configuration pane on the right-hand side as shown in Figure 11-37. Complete the task configuration using the following steps:
 - a. Select the **Solution Name** from the drop-down list.
 - b. Type the IBM Mashup Center administrative user name and password.
 - c. Set the Case Manager REST URL, making sure to set the *server:port* settings to values appropriate for your environment.



The screenshot shows a window titled '*Export Pages' with a tab icon and a close button. Below the title bar is a section header 'Export Pages' with a dropdown arrow and two icons (a folder and a document). The main text area contains the instruction: 'Enter the information for exporting your custom pages from the development environment mashup server to the case management design object store.' Below this are four input fields: 'Solution name:' with a text box containing 'Credit Card Dispute' and a dropdown arrow; 'IBM Mashup Center administrative user name:' with a text box containing 'P8Admin'; 'IBM Mashup Center password:' with two text boxes, the first containing '*****' and the second 'Confirm: *****'; and 'Case Manager REST URL:' with a text box containing 'http://cm-sseaix01-04:9080/CaseManager/CASEREST'.

Figure 11-37 Setting the export pages task configuration

8. Click the **Run a Single Task** button in the upper right corner of the Export Pages pane as shown in Figure 11-38. An Action required window appears displays with the message The task will be saved before proceeding. Do you want to continue? Click **Yes**.



This screenshot is identical to the one in Figure 11-37, showing the 'Export Pages' configuration pane with the same fields and values: 'Solution name' (Credit Card Dispute), 'IBM Mashup Center administrative user name' (P8Admin), 'IBM Mashup Center password' (*****), and 'Case Manager REST URL' (http://cm-sseaix01-04:9080/CaseManager/CASEREST).

Figure 11-38 Running the export pages task

9. In the console pane, verify that the pages exported successfully. You should see messages similar to those shown in Figure 11-39. Exit the Case Manager Administration Client on the source system.

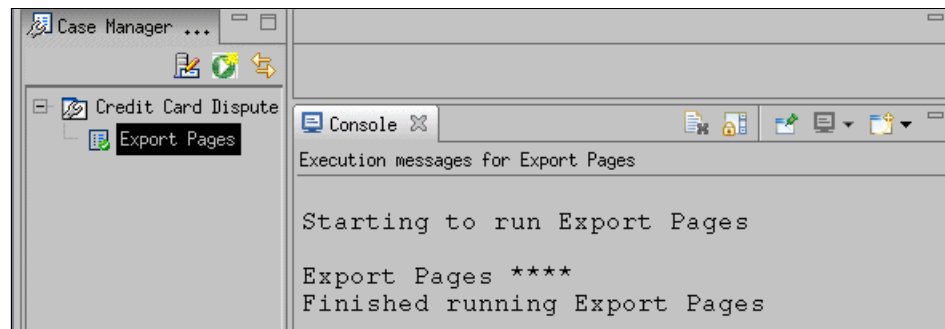


Figure 11-39 Export pages completed

11.3.2 Configure the source and destination environment CE connections using FileNet Deployment Manager

The next step is to configure the source and destination deployment environments using the Content Engine FileNet Deployment Manager tool using the following steps:

1. Start FileNet Deployment Manager in Windows by clicking **Start** → **IBM FileNet P8 Platform** → **FileNet Deployment Manager**.
2. Click **File** → **New** → **Environment** to create the source environment definition. See example in Figure 11-40.

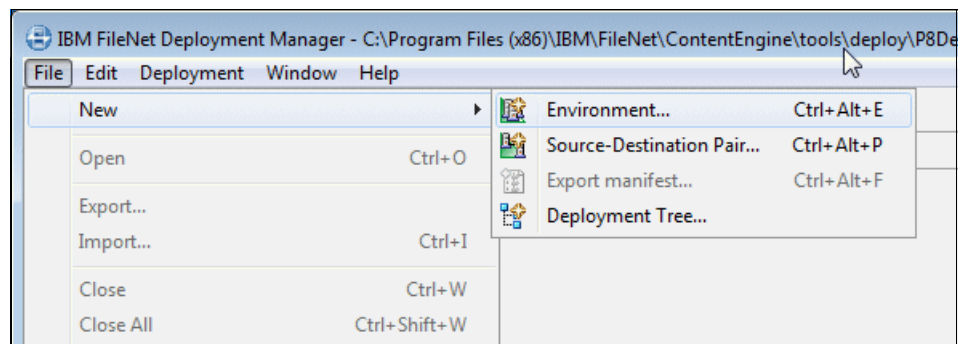


Figure 11-40 Creating an environment half-pair in FDM

3. Enter any name for the source environment. In the example shown in Figure 11-41, we used source-acmdev. Click **Finish** to complete the task.

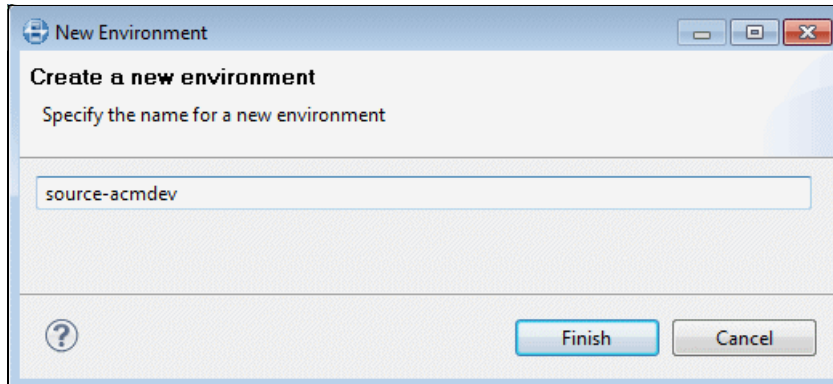


Figure 11-41 Creating the source environment

4. Using the same method, create the destination environment definition and call it target-acmprod.
5. Next, create the Source-Destination pair that links the source to the destination. Click **File** → **New** → **Source-Destination Pair** as shown in Figure 11-42.

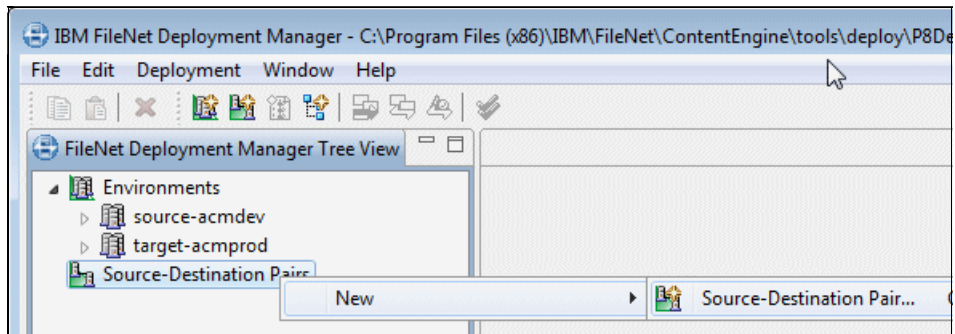


Figure 11-42 Creating the Source-Destination pair

6. Enter a name for the source-destination pair. In the example shown in Figure 11-43 on page 370 we used acmdev-acmprod. From the drop-down lists, select the source and destination environment half pairs. Click **Finish** to complete.

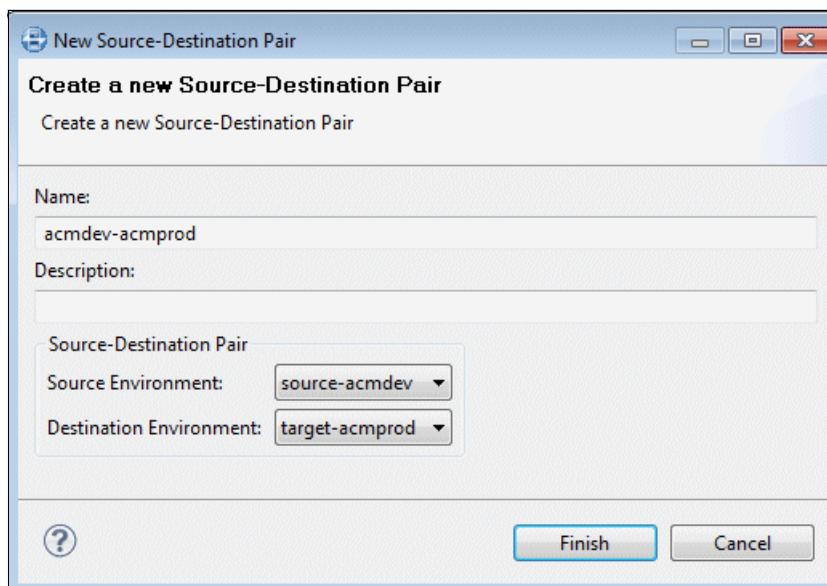


Figure 11-43 Creating the source-destination pair

7. Expand **Environments** in the left pane, right-click the source environment, and select **Open**. Click the **CE Connection** tab. Enter configuration parameters for the source system as shown in Figure 11-44 on page 371:
 - a. In the right pane, select values appropriate for connecting to the source Content Engine.
 - b. Type values for the Server and UserName entries for the source environment.
 - c. Click the **Test Connection** button and enter the type in the Enter the password window. The Successfully Connected status displays.

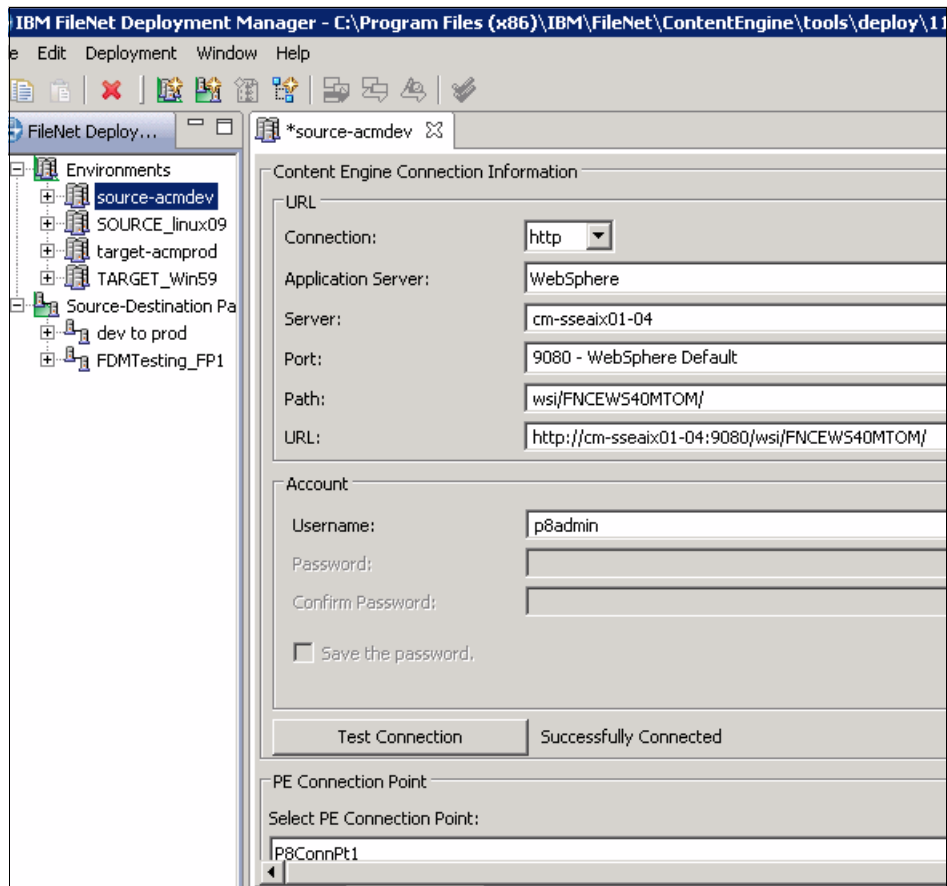


Figure 11-44 Configuring the source environment CE connection

8. Using the same method, configure the destination environment CE connection and test it. Refer to Figure 11-45 on page 372 for an example configuration.

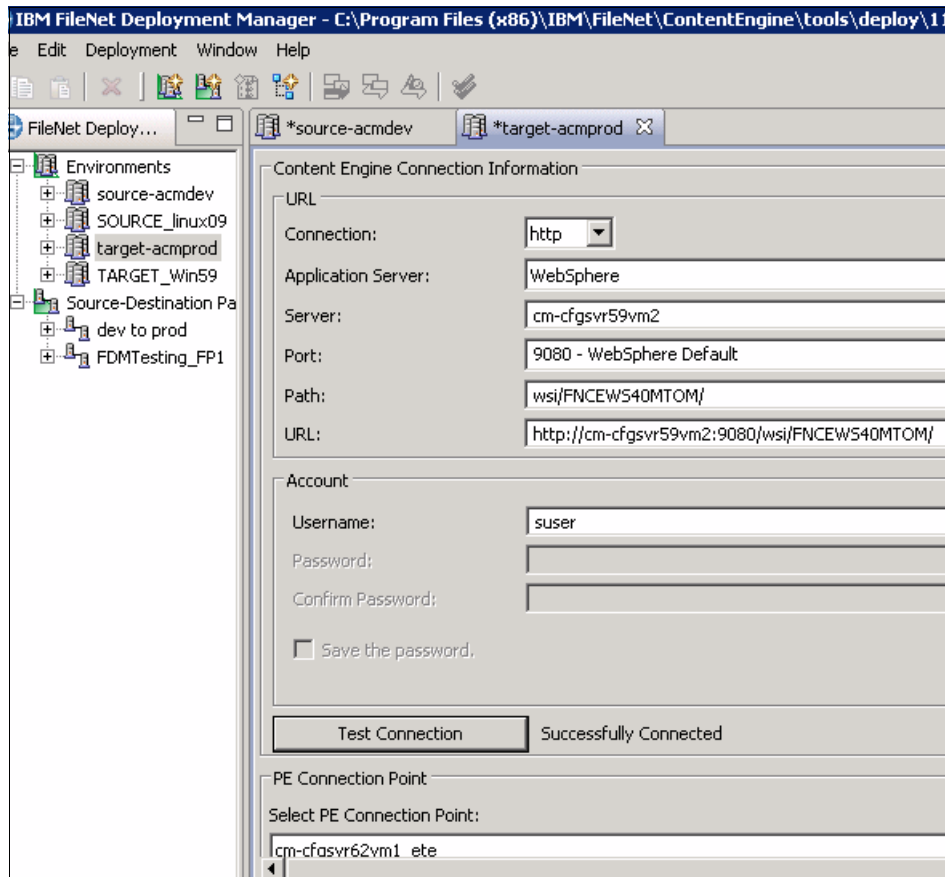


Figure 11-45 Configuring the destination environment CE connection

9. Save the configurations by clicking **File** → **Save All**.

11.3.3 Retrieve half maps from source and destination servers

Next we extract the half maps from the source and destination domains. The half maps consist of object store, security principal, and service data (web-service related information for workflow maps). To retrieve the half maps, use the following steps:

1. From the FileNet Deployment Manager, open the source environment in the left pane, and click the **Overview** tab.
2. Click the **Retrieve Data** button for the Object Store Data half map as shown in Figure 11-46 on page 373.

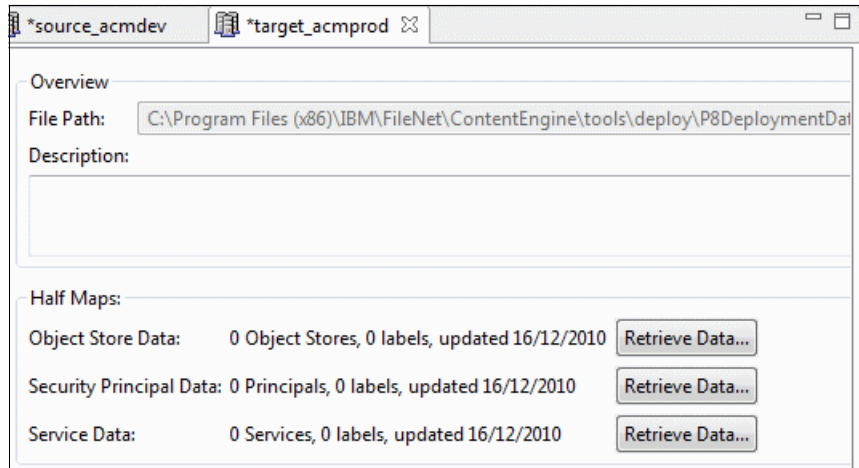


Figure 11-46 Ready to extract the source half-maps

3. Select the mode (**Merge** or **Overwrite**) to use when building the Object Store half map file. In our case, we selected **Overwrite** as shown in Figure 11-47. Click **OK**.

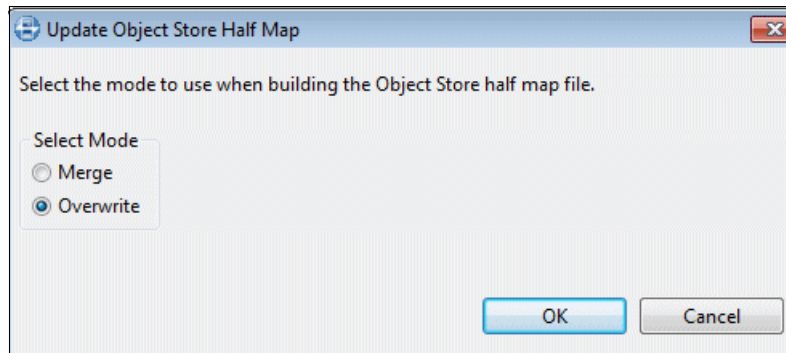


Figure 11-47 Retrieving the object store half map

4. Click **OK** in the Successfully retrieved the object store data window. You should see the correct number of object stores reported.
5. Click the **Retrieve Data** button for the Security Principal Data half map as shown in Figure 11-48 on page 374.

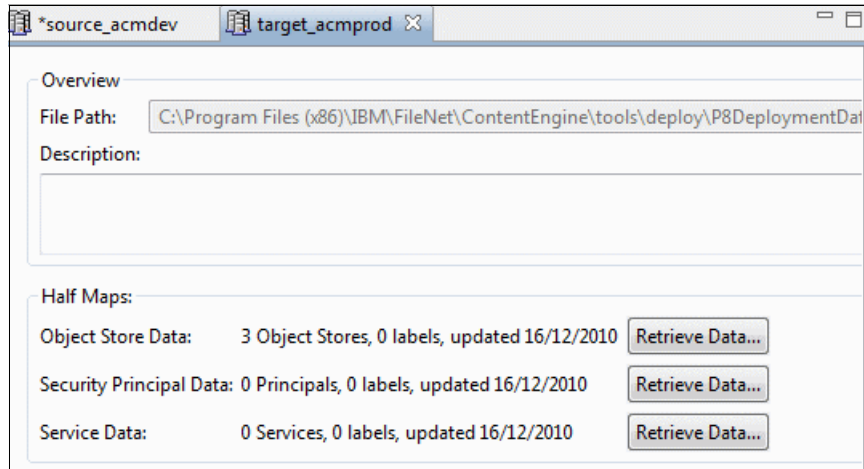


Figure 11-48 Retrieving the source object store half map

6. Select the Principal data source from the following options:

- **Deploy Dataset File**
- **From Content Engine's LDAP Provider**
- **Process Engine Configuration Export File**

In our example, we selected the **From Content Engine's LDAP Provider** as shown in Figure 11-49 on page 375.

Note: This will return all users and groups from the LDAP provider, so it is better to use the **Deploy Dataset File** or **Process Engine Configuration Export File** options if the dataset or export file is available, as these will only retrieve the security principals used to secure the object stores rather than all LDAP users.

Using the Option **From Content Engine's LDAP Provider** might take a long time, depending on the number of users and groups contained in the LDAP directory.

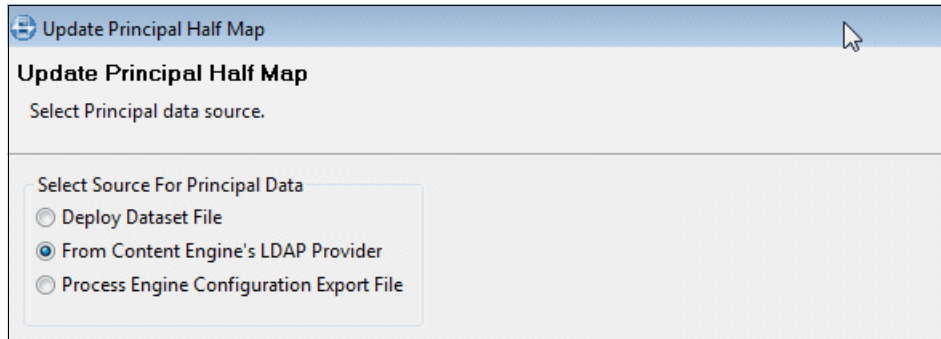


Figure 11-49 Retrieving the source Security Principal Data half map

7. Click **Next**.
8. Click the **Retrieve Realms** button as shown in Figure 11-50.

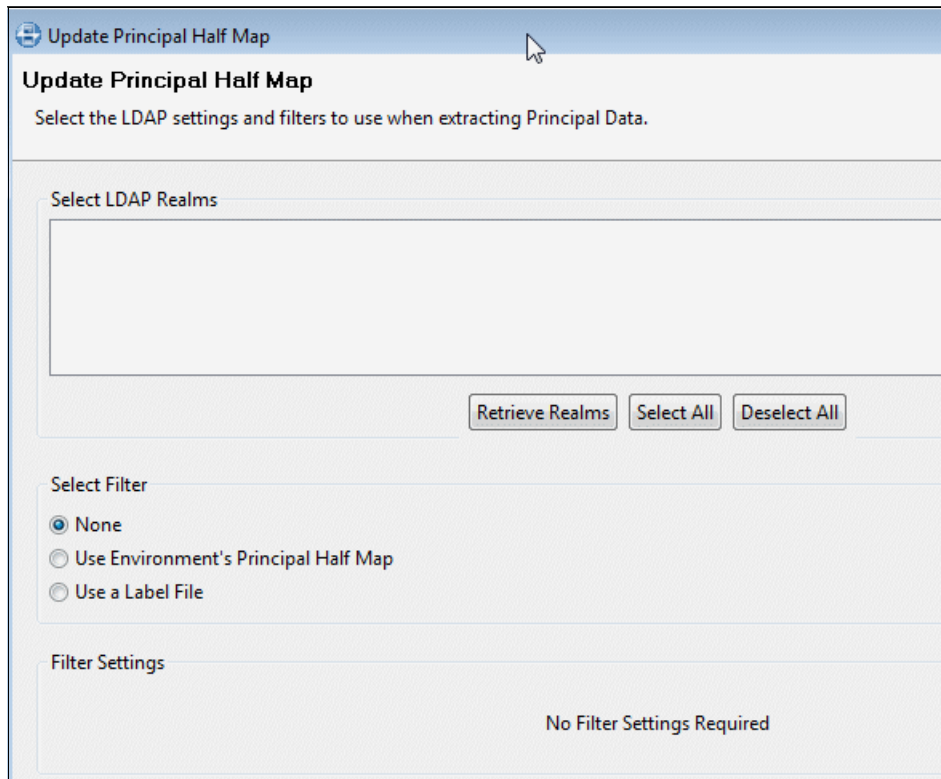


Figure 11-50 Creating the security principal half map

9. Select the required realms as shown in Figure 11-51 and click **Finish**.

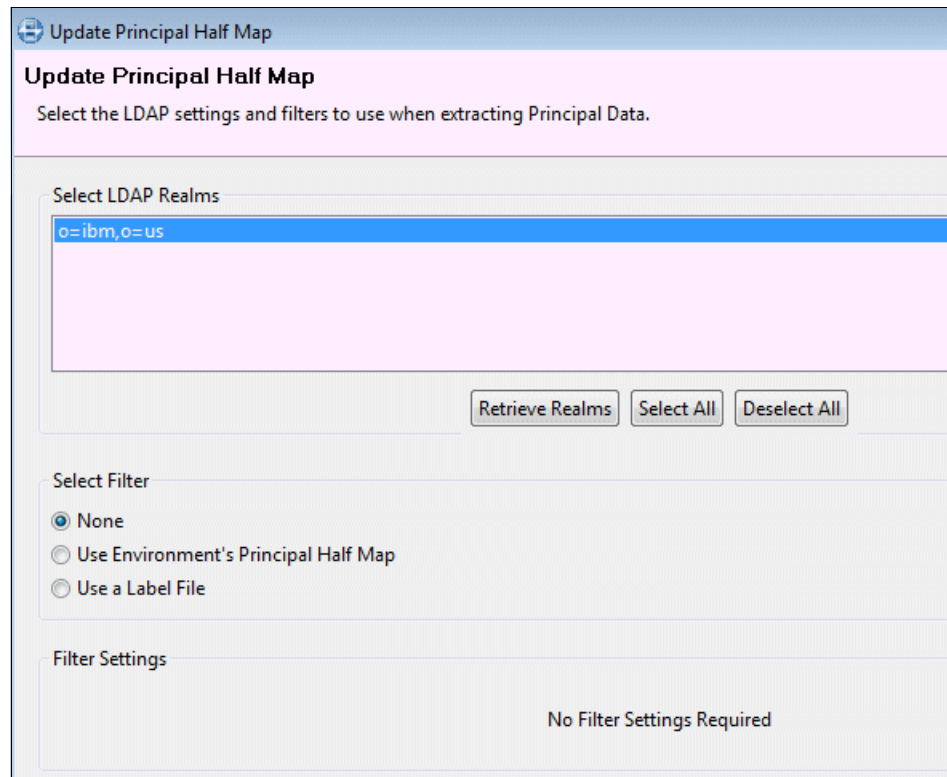


Figure 11-51 Retrieving the security principals.

10. The Retrieve All Principals from LDAP warning window as shown in Figure 11-52 appears. If you want to proceed, click **Yes**.

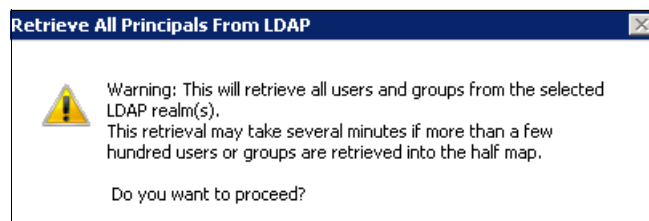


Figure 11-52 LDAP users retrieval warning message

11. Note the number of security principal objects retrieved as shown in Figure 11-53 on page 377.

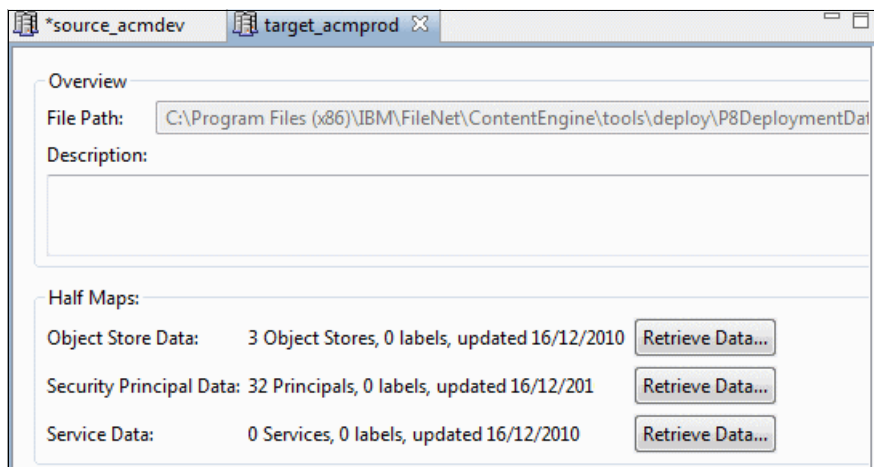


Figure 11-53 Security principals now retrieved

Note: You only have to retrieve the **Service Data** if your workflows use web services steps. This example does not utilize web services, so refer to the documentation if this is necessary in your environment.

12. Repeat these steps to build the half maps for the destination domain as shown in Figure 11-54.

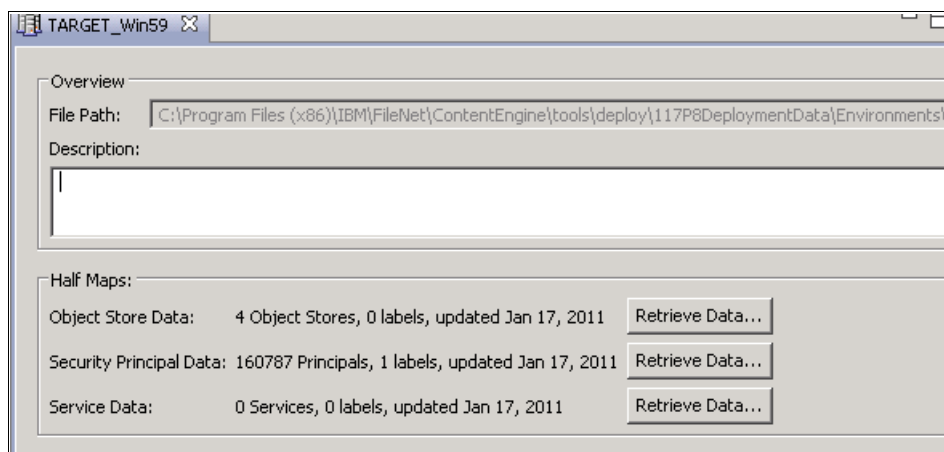


Figure 11-54 The destination domain half maps completed

11.3.4 Create an export of the solution package

After the half maps are complete, create an export manifest of the solution package(s) to be deployed into production using the FileNet Deployment Manager using the following steps:

1. In the FileNet Deployment Manager Tree View pane, select **Environments** → **source domain** → **Export Manifests** as shown in Figure 11-55. Right-click the solution package and select **New** → **Export Manifest**.

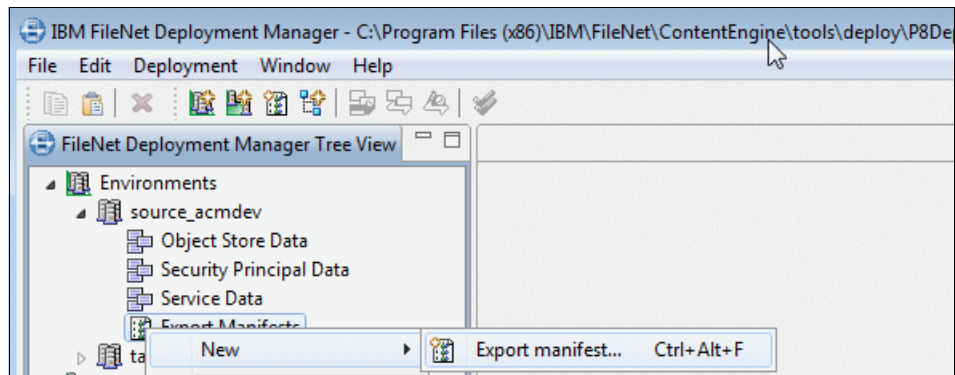


Figure 11-55 Creating an export manifest for the source domain

2. Enter a name for the export manifest. In our example shown in Figure 11-56, we named the export file `acmdev_exp`. Click **Finish**.

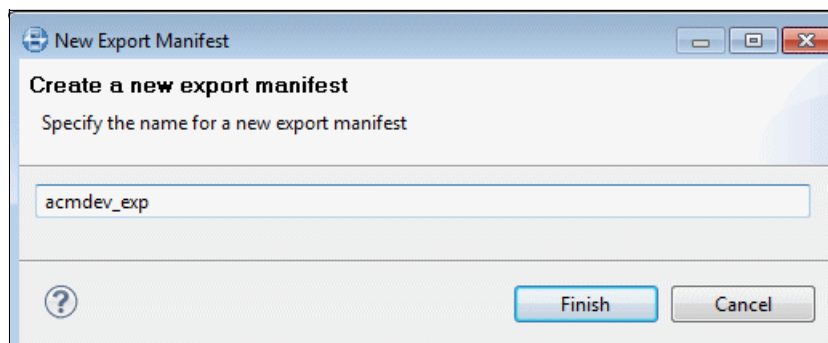


Figure 11-56 Creating an export manifest

3. In the left pane, double click the new export manifest. Click the green **Add** button located in the toolbar at the top of your window as shown in Figure 11-57 on page 379.

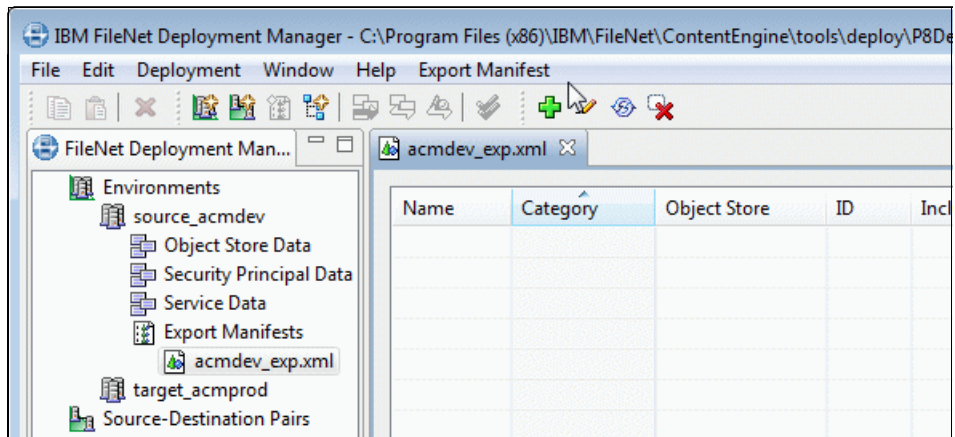


Figure 11-57 Adding solution(s) to the export manifest

4. This opens the Add Assets window as shown in Figure 11-58 on page 380. Perform the following steps to add the solution to the export manifest:
 - a. On the left pane of the Add Assets window, expand the nodes in the Design Object Store to navigate to the **Solutions** folder: **Design Object Store** → **Folders and Contained Objects** → **Root Folder** → **IBM Case Manager** → **Solutions**.
 - b. The solutions display in the right pane. Select the **Credit Card Dispute** solution and click the **Add** button.
 - c. Click **Close**.

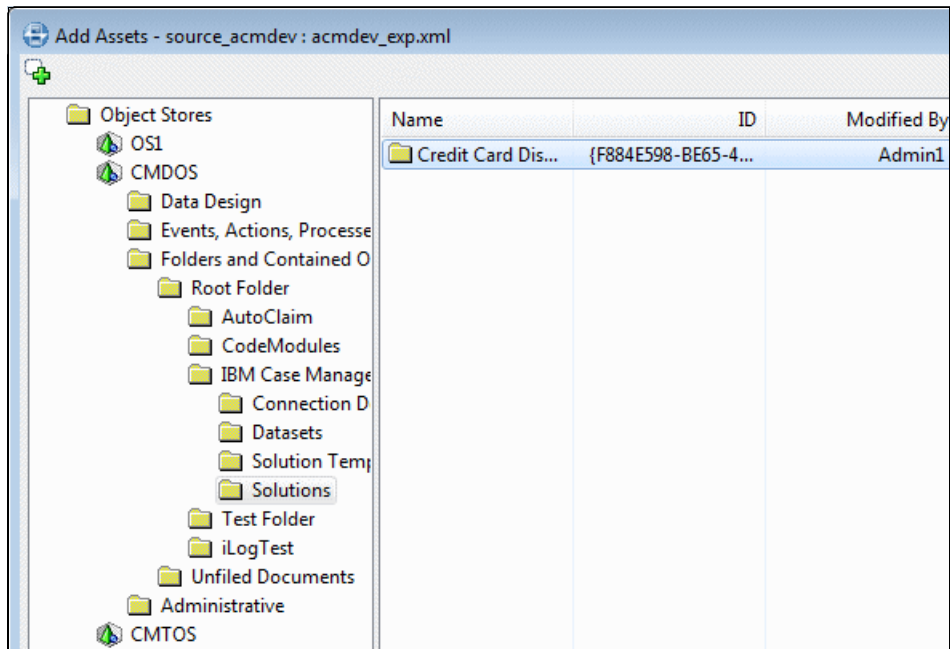


Figure 11-58 Adding solution(s) to the export manifest

5. Select the options for export. Click the **Edit** button (next to the green **Add** button at the top of the right pane) and select the following options as displayed in Figure 11-59 on page 381. Click **OK**.
 - Include security objects
 - Include subfolders
 - Include contents of folders
 - Include relationships to containing folders

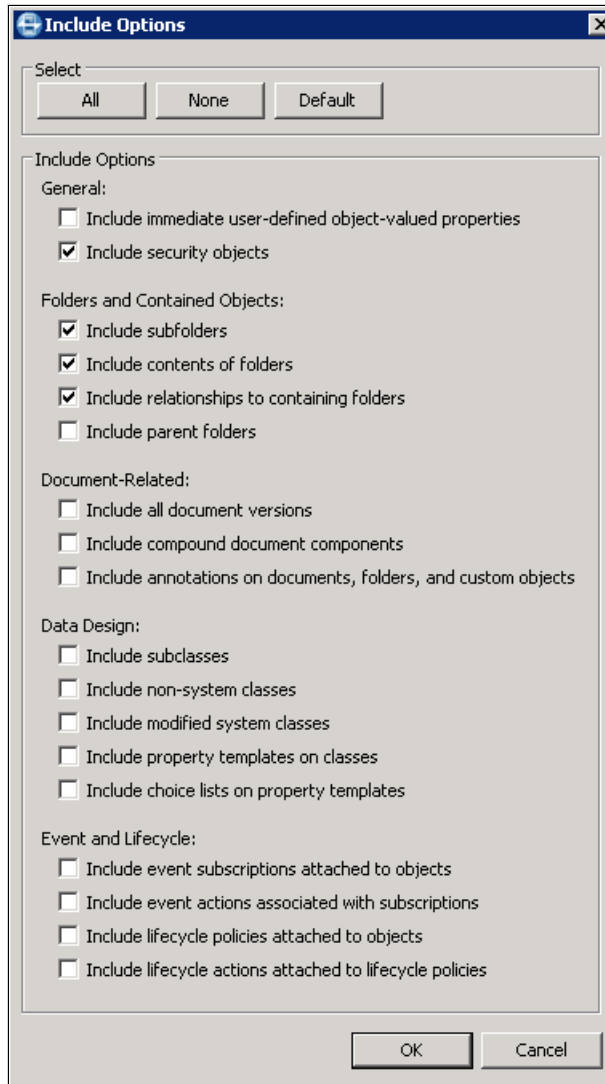


Figure 11-59 Configure include options for export manifest

6. Save your changes.
7. In the left pane, navigate to export manifest as shown in Figure 11-60 on page 382. Right-click the export manifest file again and select **Export**.

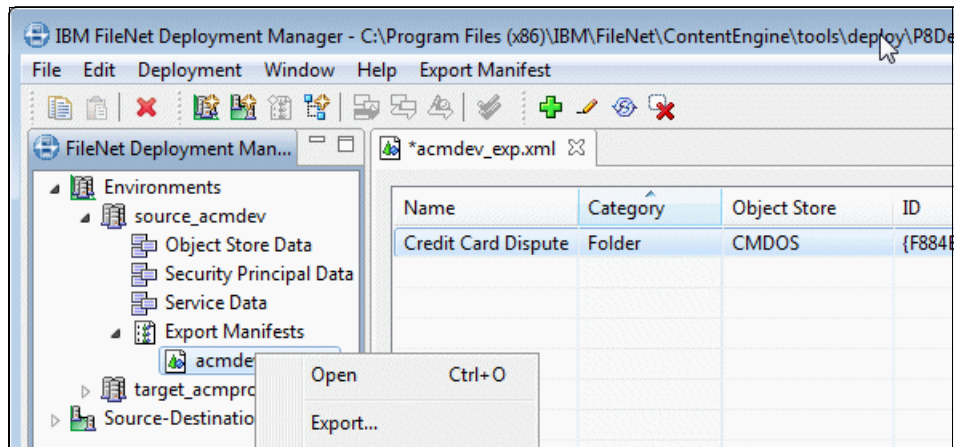


Figure 11-60 Exporting the solution

8. On the Export Options window, accept the defaults as shown in Figure 11-61. Click **OK**.

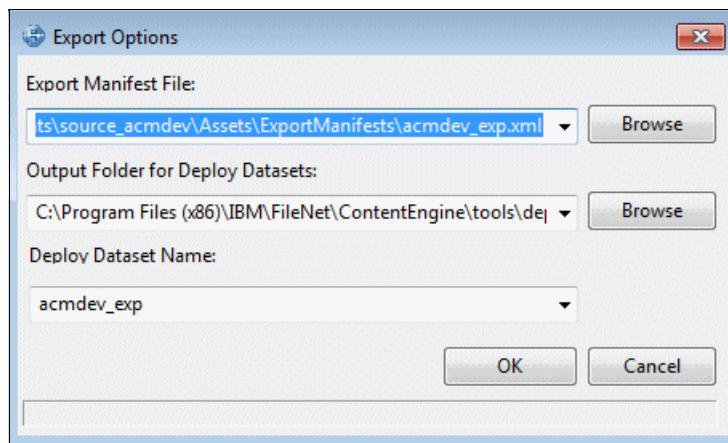


Figure 11-61 Exporting the solution

9. You should receive a message similar to that shown in Figure 11-62 on page 383 stating the export was successful. Click **OK**.

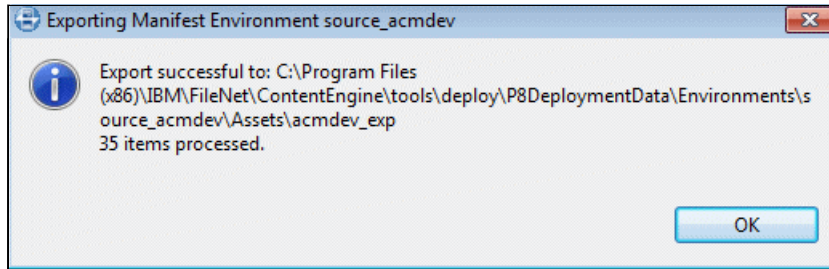


Figure 11-62 Successfully exported the solution

11.3.5 Map source information to destination information

Next you must map the source map information to the destination map information to make a complete conversion map for the object stores and security principals. This step is required when the object store names or security principal names on the source system differ from those used by the destination system. For example, the solution might exist on an object store named OS1 in the source domain, but you want it to be deployed into an object store named OS2 in the destination domain. Similarly, the object store administrator user can be Admin1 in the source domain, but it is to be Admin2 in the destination domain.

To map the information, perform the following steps:

1. In the FileNet Deployment Manager Tree View pane, expand the **Source-Destination** node, then expand the **acmdev-acmprod** source destination pair node, and double-click **Object Store Map**.
2. For each source object store listed, select the appropriate destination object store from the dropdown list. "###" will display in the destination object store name until you select an object store from the dropdown menu. In our example shown in Figure 11-63 on page 384, we mapped the CMTOS object store on the source domain to the OS1 object store on the destination domain.

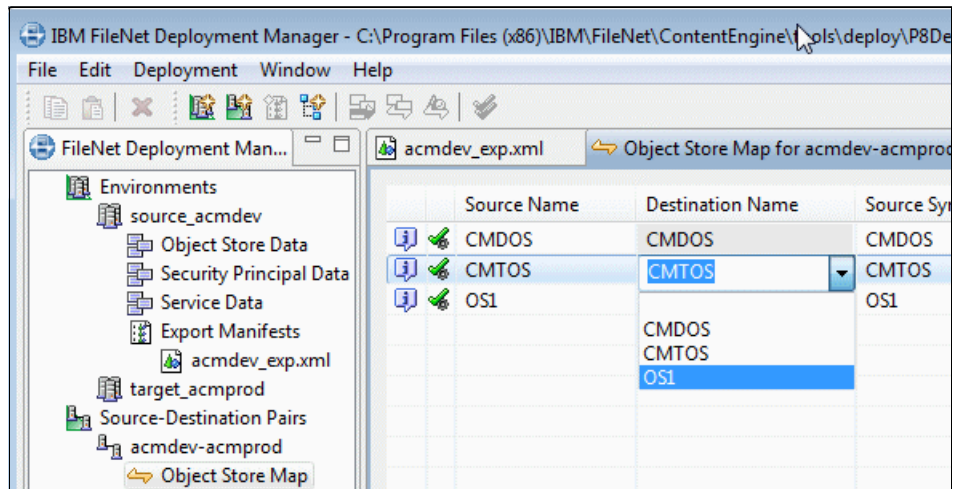


Figure 11-63 Mapping the destination object stores to the source objects stores

3. Double-click the **Security Principal Map**.
4. For each source short name listed, select the appropriate destination short name from the drop-down list. In our example shown in Figure 11-64 on page 385, we mapped the admin2 user on the source domain to the cadmin1 user on the destination domain. This way, any references to admin2 on the source solution package will appear as cadmin1 on the destination solution package.

Note: These mappings are only for the security principals used to secure all Content Engine objects. They do not refer to the users that log in and use the system.

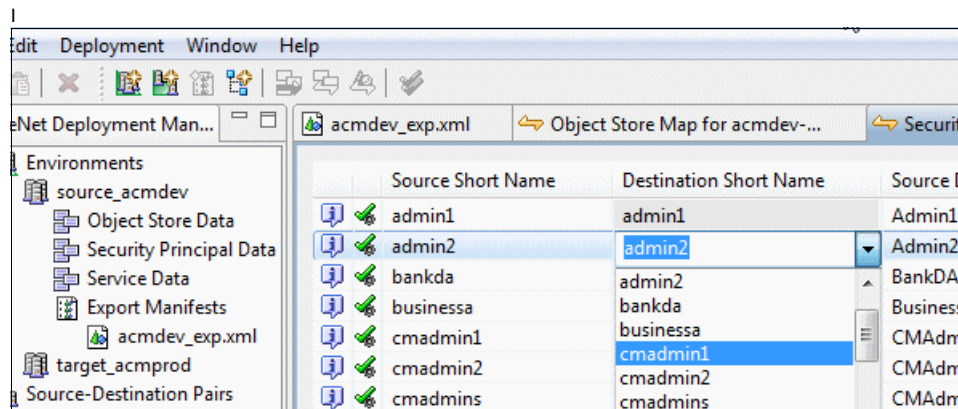


Figure 11-64 Mapping the security principals

- In the FileNet Deployment Manager Tree View pane, browse to **Source-Destination Pairs** and double click **acmdev-acmprod**. In the right pane, click the **Map Data** button for the Object Store Map to create the full object store map. You should see a message that the object store data map was created successfully as shown in Figure 11-65. Click **OK**.

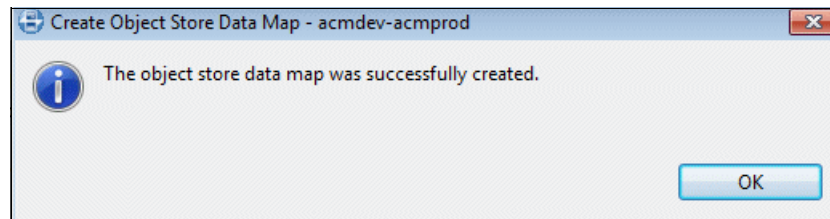


Figure 11-65 Mapping the object stores

- Click the **Map Data** button for the Security Principal Map to create the full security principal map. You should see a message that the principal data map was created successfully as shown in Figure 11-66. Click **OK**.

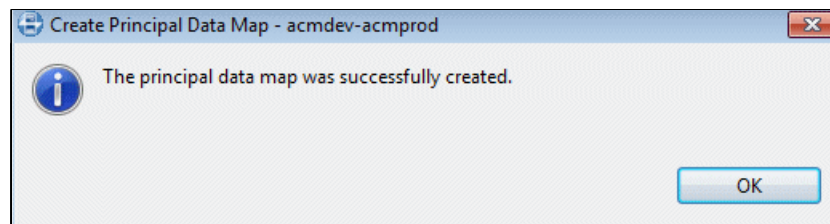


Figure 11-66 Mapping the security principals

- Save your changes.

8. In the left pane, right-click the **source-target** node (**acmdev-acmprod**) and select **Convert Assets** as shown in Figure 11-67 to create the final deployment file.

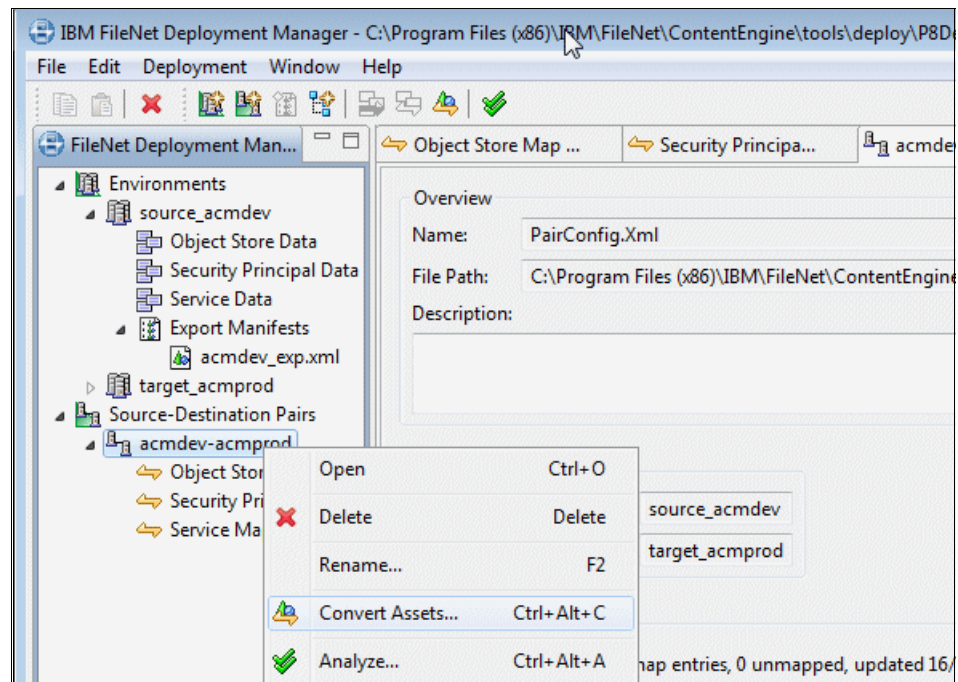


Figure 11-67 Converting assets to create the final deployment file

9. When prompted for the type of asset to convert, select the **Content Engine Deploy Dataset** radio button as shown in Figure 11-68. Click **Finish**.

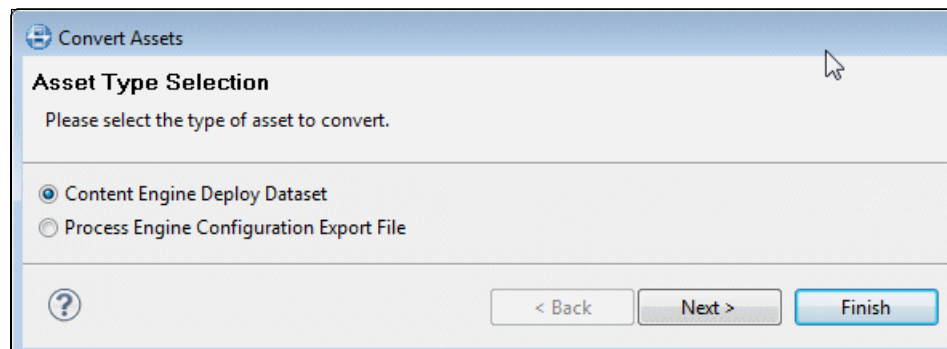


Figure 11-68 Asset type selection

10. You should see a message stating the assets have been successfully converted. Click **OK**.

11.3.6 Analyze exported data

Analyze the converted data using FileNet Deployment Manager to check for any errors or inconsistencies by following these steps:

1. In the FileNet Deployment Manager Tree View pane, browse to **Source-Destination Pairs**. Right click the **source-target** node (acmdev-acmprod) and select **Analyze** as shown in Figure 11-69 to analyze the converted assets for errors.

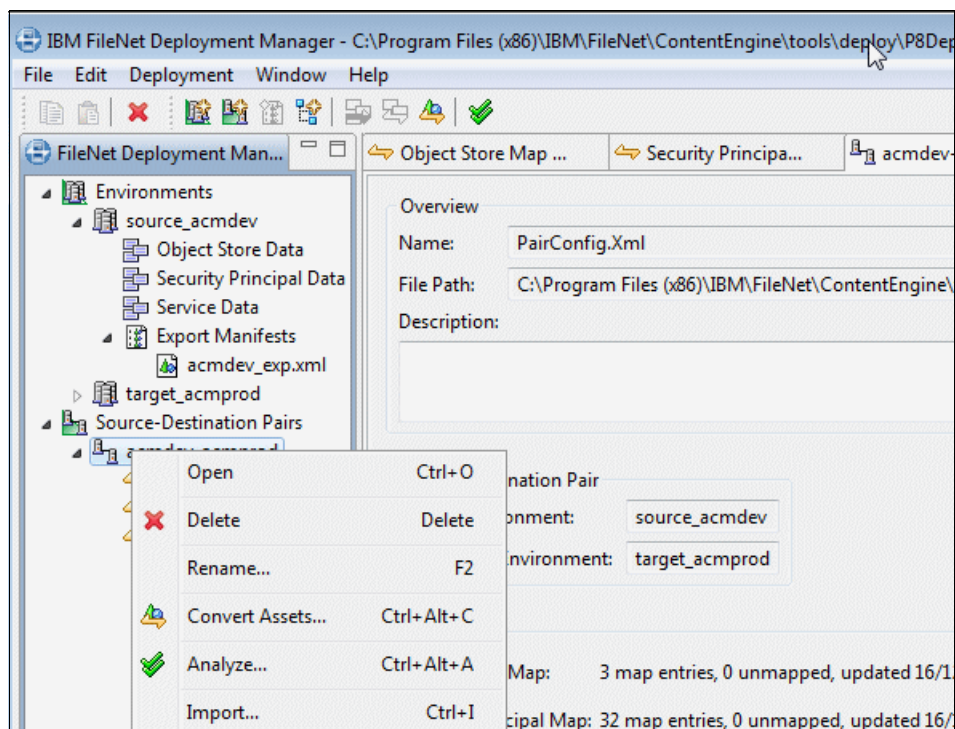


Figure 11-69 Analyzing the converted assets

2. When prompted to select the source for change impact analysis, select **Content Engine Deploy Dataset** as shown in Figure 11-70 on page 388 and click **Next**.

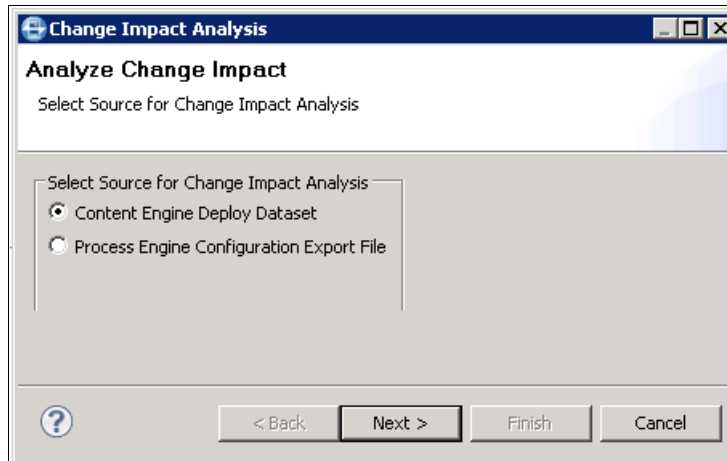


Figure 11-70 Analyze change impact

3. Select the Analysis destination, then click **Next**.
4. Select Import Analysis options, then click **Next**.
5. Select the Change Impact Report file, then click **Next**.
6. Click **Finish** in the summary window.
7. You should see a status message noting the number of items that passed and failed validation similar to that shown in Figure 11-71. Click **OK**.

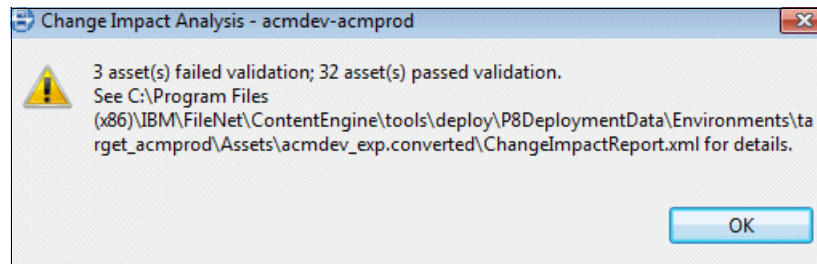


Figure 11-71 Results of analyze phase

8. A detailed analysis report, similar to that shown in Figure 11-72 on page 389, is displayed and is used to track the cause of any failures.

Note: If there are validation errors, click the hyperlink **Assets that Failed Analysis** to view the error information. Because our example had no errors reported, the hyperlink does not appear in our report.

<h1>Change Impact Analysis Report</h1> <h2>Table of Contents</h2> <p>Summary</p> <p>Statistics by Class</p> <p>Estimated Size Information by Class</p> <p>Estimated Size Information by Data Type</p> <h2>Summary</h2> <table> <tr> <td>Report Generated On:</td><td>2010-12-16 16:02:39 EST</td></tr> <tr> <td>Report</td><td>C:\Program Files (x86)</td></tr> </table>		Report Generated On:	2010-12-16 16:02:39 EST	Report	C:\Program Files (x86)
Report Generated On:	2010-12-16 16:02:39 EST				
Report	C:\Program Files (x86)				

Figure 11-72 The change impact analysis report

11.3.7 Import solution assets into the destination design object store

Next we will import the converted assets into the design object store on the destination system using the following steps:

1. In the FileNet Deployment Manager Tree View pane, browse to **Source-Destination Pairs**. Right-click the *source-target* node (**acmdev-acmprod**) and select **Import** as shown in Figure 11-73 on page 390 to import the solution assets into the destination system’s design object store.

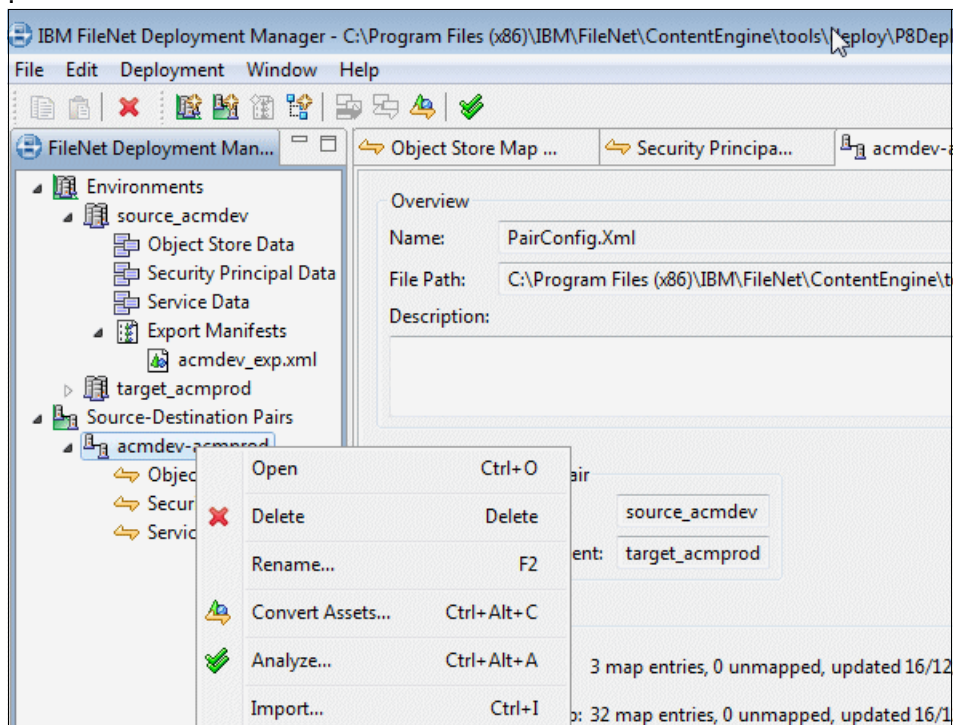


Figure 11-73 Performing the import

2. Set the import options as shown in Figure 11-74 on page 391, and click **Finish**.

Note: It is important to click to clear the **Use original create/update timestamps and users** option. Also, under the update options list, select the **Always Update** radio button. Failure to set these options might result in import errors.

There is no need to run pre or post scripts.

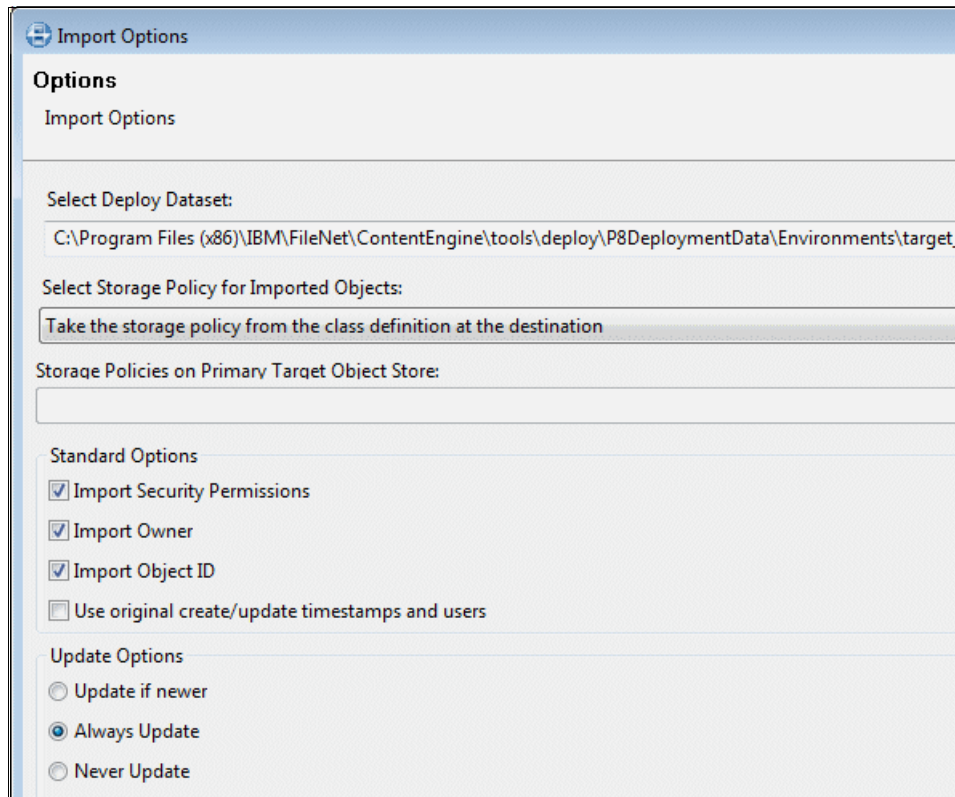


Figure 11-74 Import options

3. You should see a status message noting the number of items that were imported similar to that shown in Figure 11-75. Click **OK**.

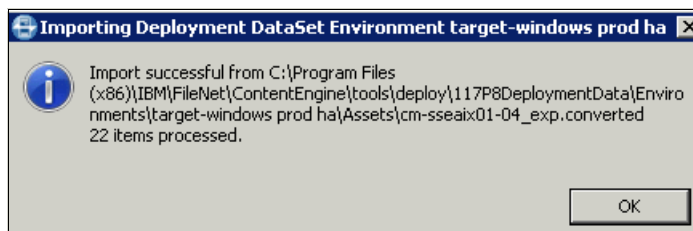


Figure 11-75 Import successful

4. Using FileNet Enterprise Manager on the destination Content Engine, verify the solution package exists in the design object store. Figure 11-76 on page 392 shows the Credit Card Dispute solution we imported for this test case.

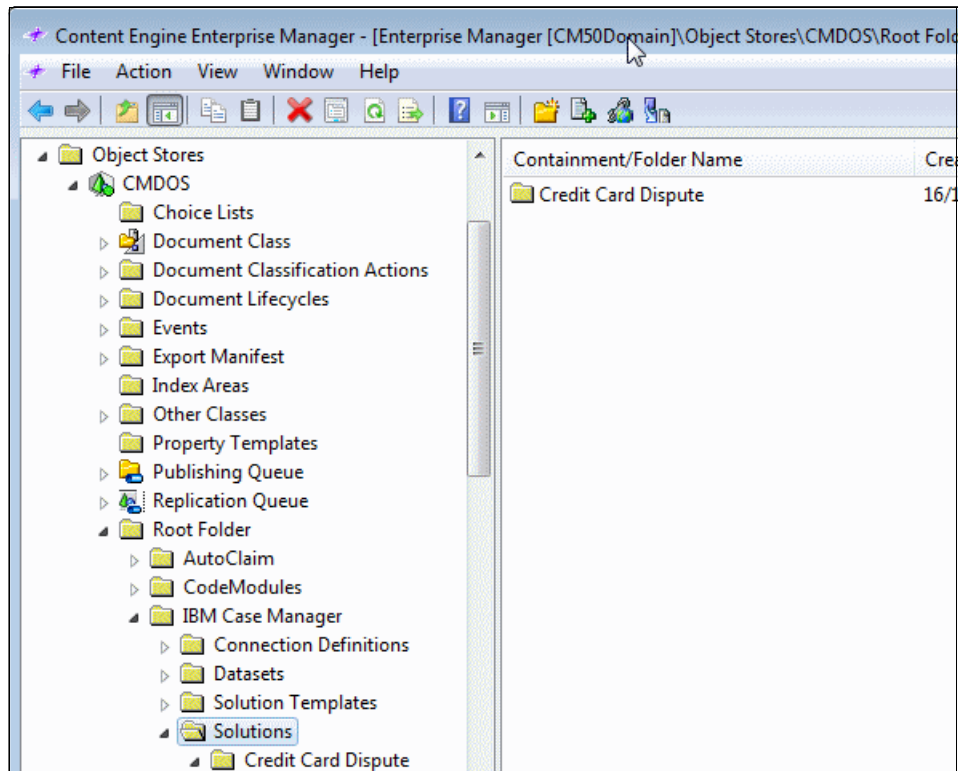


Figure 11-76 The solution now appears in the destination design object store

11.3.8 Deploy the solution to the destination object store

In development environments, you deploy solutions to the destination object store using the IBM Case Manager Builder application. Production environments do not include the IBM Case Manager Builder application, so you must use the Case Manager Administration Console to deploy a solution to production destination object stores using the following steps:

1. On the production server, start Case Manager Administration Console with the following command line:

/opt/CaseManagement/configure/configmgr

2. Click **File** → **Create Profile** as shown in Figure 11-77 on page 393 to create a profile for the deployment.

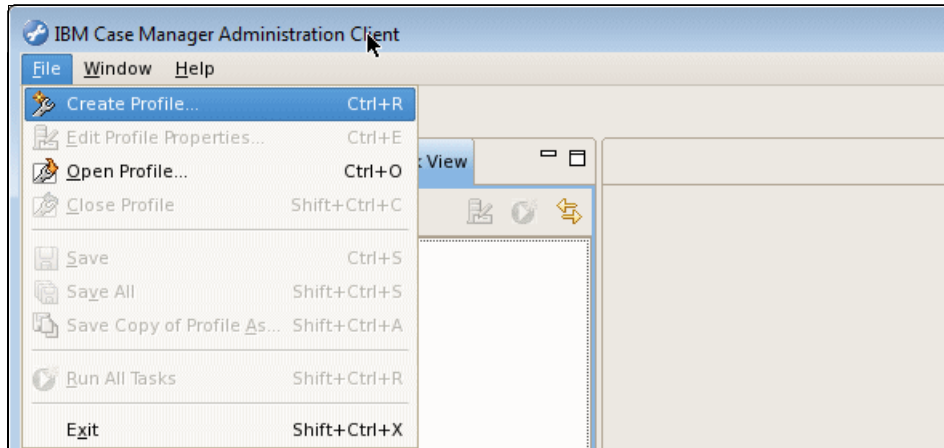


Figure 11-77 Deploying the solution on the production destination object store

3. Select profile type **Case Deployment profile** and type a name for the profile as shown in Figure 11-78. Click **Next**.

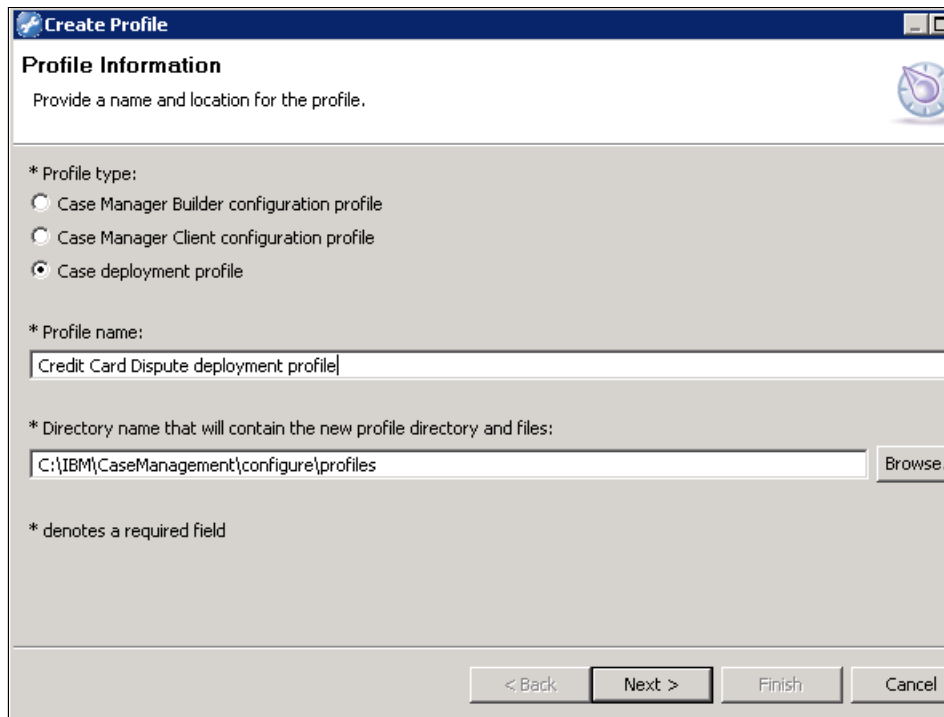
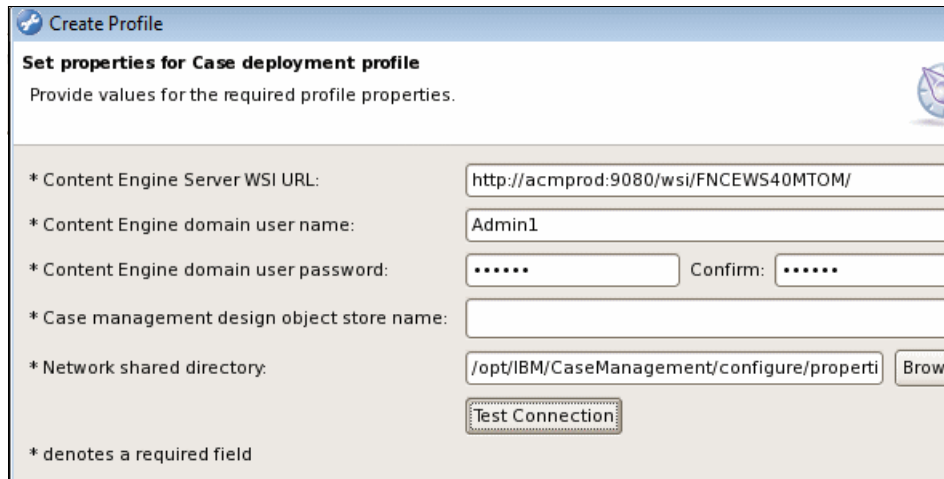


Figure 11-78 Create the case deployment profile

4. Enter values for the following fields:
 - Content Engine Server WSI URL
 - Content Engine domain user name
 - Content Engine domain user password

Values used for our environment are shown in Figure 11-79. Click the **Test Connection** button to verify connectivity with the Content Engine.



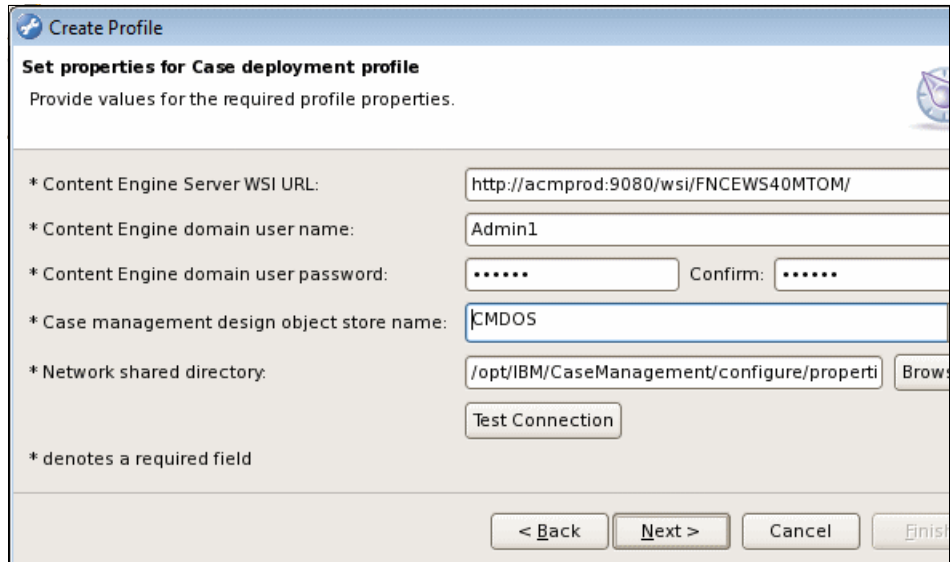
The screenshot shows a 'Create Profile' dialog box with the title 'Set properties for Case deployment profile'. Below the title, it says 'Provide values for the required profile properties.' The form contains several fields with asterisks indicating they are required:

- * Content Engine Server WSI URL:
- * Content Engine domain user name:
- * Content Engine domain user password: Confirm:
- * Case management design object store name:
- * Network shared directory:

At the bottom, there is a 'Test Connection' button and a note: '* denotes a required field'.

Figure 11-79 Creating the case deployment profile on the production system

5. Select the Case management design object store from the drop-down list as shown in Figure 11-80 on page 395 and click **Next**.



Create Profile

Set properties for Case deployment profile
Provide values for the required profile properties.

* Content Engine Server WSI URL:

* Content Engine domain user name:

* Content Engine domain user password: Confirm:

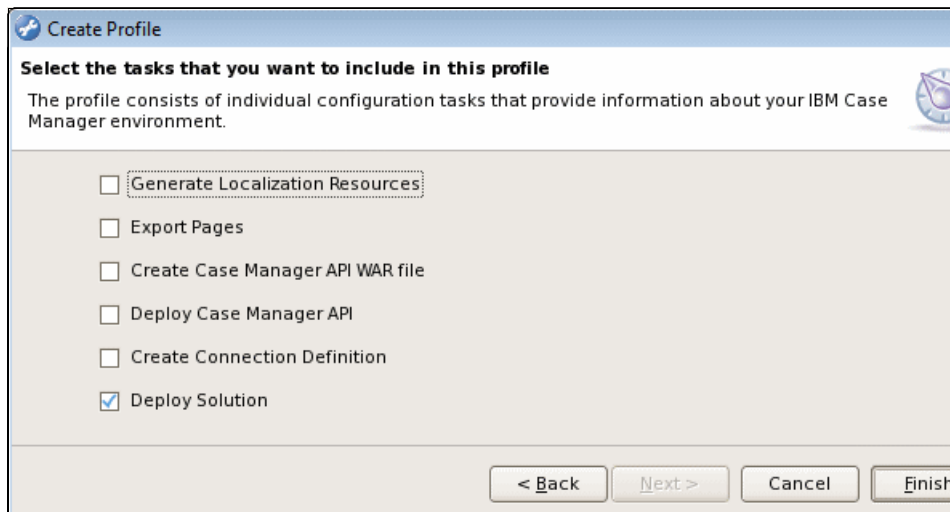
* Case management design object store name:

* Network shared directory:

* denotes a required field

Figure 11-80 Select the design object store

- From the list of task to include in the profile, select only the **Deploy Solution** task as shown in Figure 11-81. Click **Finish**.



Create Profile

Select the tasks that you want to include in this profile
The profile consists of individual configuration tasks that provide information about your IBM Case Manager environment.

☐ Generate Localization Resources

☐ Export Pages

☐ Create Case Manager API WAR file

☐ Deploy Case Manager API

☐ Create Connection Definition

☒ Deploy Solution

Figure 11-81 Selecting the CMAC tasks to run

- Create a Connection Definition task by selecting the deployment profile just created, right-clicking **Add New Task** and then selecting **Create Connection Definition** as shown in Figure 11-82 on page 396.

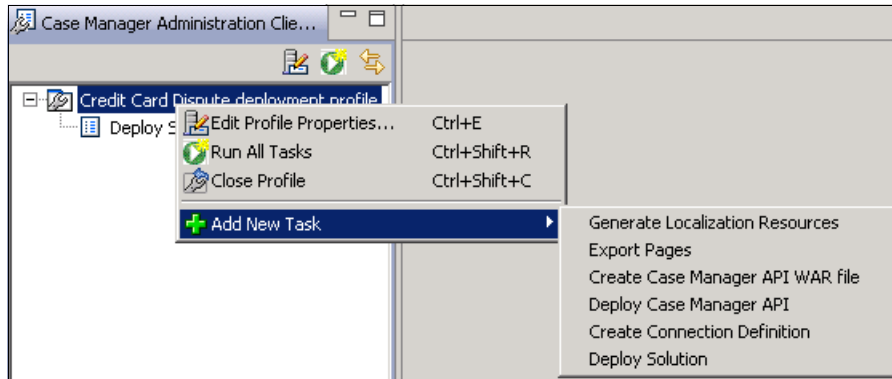


Figure 11-82 Create Connection Definition

8. Double-click the newly created connection definition, type the Connection definition name and Mashup server URL, and select the Process Engine Connection point you want to use as shown in Figure 11-83.

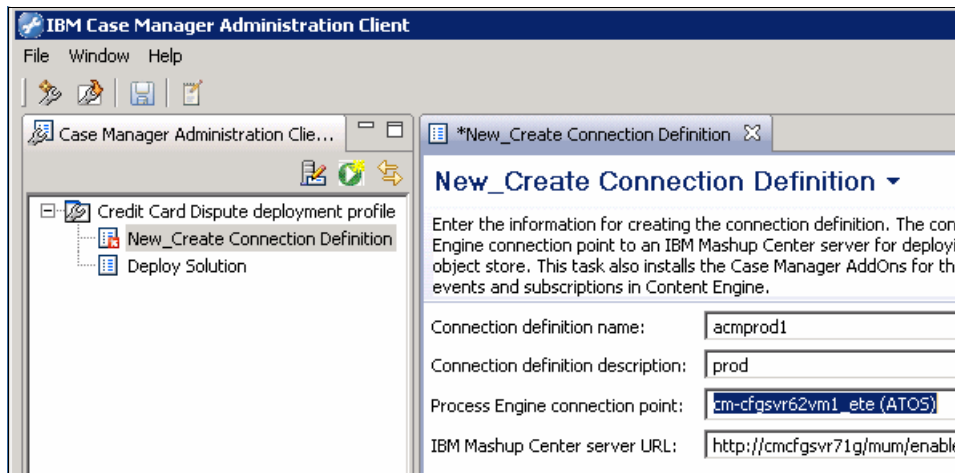


Figure 11-83 Configure the connection definition

9. Click the **Run A Single Task** button located on the upper right corner of the pane (icon has a green arrow).
10. Double click the **Deploy Solution** task in the left pane to open the task for editing. Provide the following values:
 - a. Select the Connection Definition from the dropdown list.
 - b. Select the Solution Name from the dropdown list.
 - c. Enter the Case Manager REST URL using the following format:

`http://server:port/CaseManager/CASEREST`

Set the *server:port* to values appropriate for your environment.

Your values should look similar to those shown in Figure 11-84. Save your edits and click the **Run A Single Task** button located on the upper right corner of the pane to start the deployment.

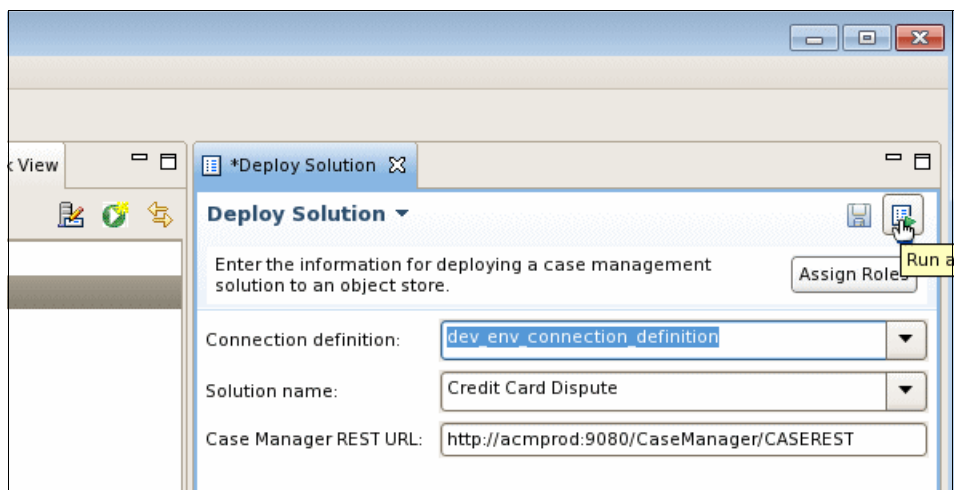


Figure 11-84 Configuring the Deploy Solution task

11. In the console pane, verify that the solution deployed successfully. You should see messages similar to those shown in Figure 11-85 on page 398. Exit the IBM Case Manager Administration Client on the destination system.

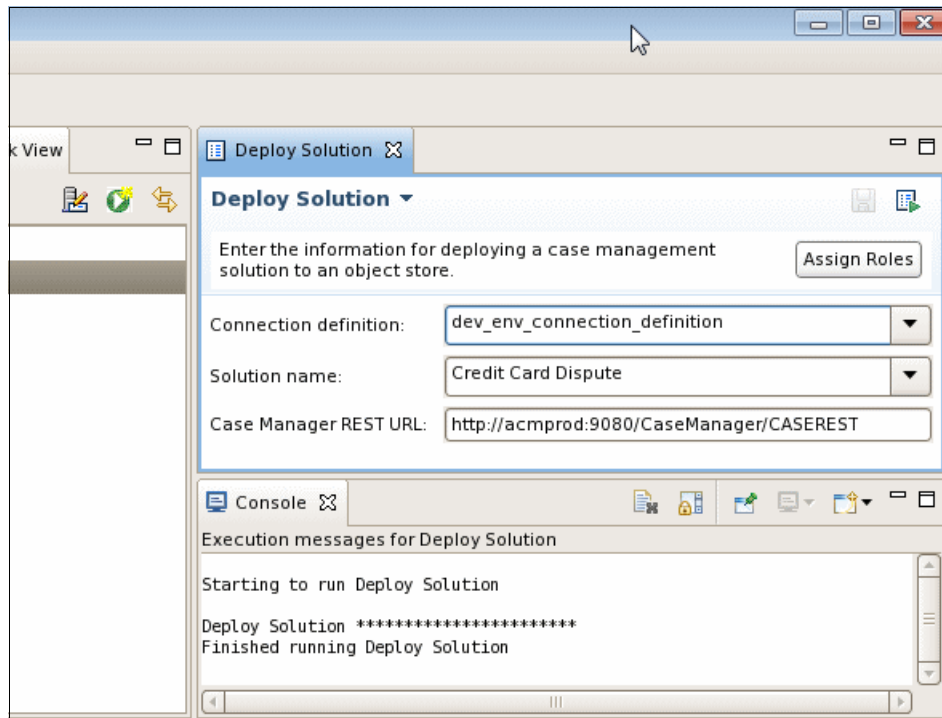


Figure 11-85 Production deployment complete

12. Using FileNet Enterprise Manager on the destination Content Engine, verify the solution exists in the destination object store. Figure 11-86 on page 399 shows the Credit Card Dispute solution we deployed for this test case.

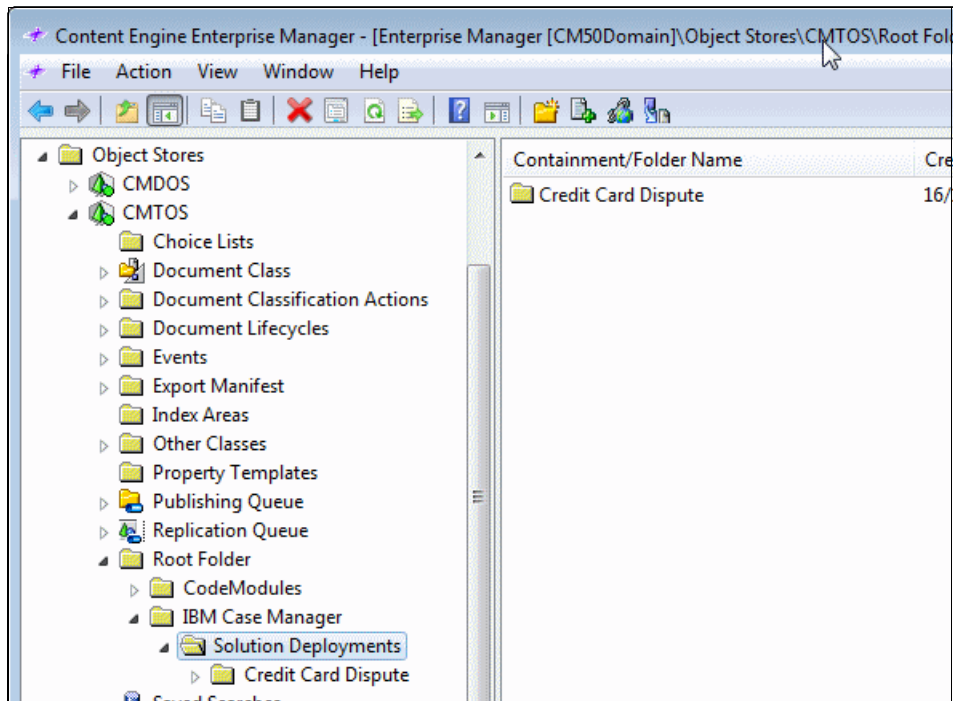


Figure 11-86 The solution visible in the production destination object store

13. The solution is now ready for use with the Case Manager Client. Remember that you must first assign users and groups to the solution roles, log out, then log back in before you can actually add a new case. These steps are described in 11.1, “Deploying a solution in a development environment” on page 340.

Note: After deploying the solution in a production environment, users and groups have to be added in various places (Content Engine, Process Engine and Lotus Mashup spaces and pages) because by default, the right security to the solutions are not set.

For more information, refer to IBM Case Manager Information Center topic: “Deploying a solution into production” and read the permission related topics at the following URL:

<http://publib.boulder.ibm.com/infocenter/casemgmt/v5r0m0/index.jsp>



Modifying a task with Process Designer

In this chapter, we show you how to modify a task with Process Designer, a process also known as round tripping.

This chapter covers the following topics:

- ▶ Modifying a task with Process Designer overview
- ▶ Configuring a component queue using Process Designer
- ▶ Adding a component queue step using Process Designer

12.1 Modifying a task with Process Designer overview

Sometimes the full functionality of IBM FileNet P8 Process Designer (Process Designer) will be needed in a task that requires workflow functionality not available in the IBM Case Manager Builder (Case Builder) interface. This practice is sometimes known as *round tripping*, implying that you move from Step Editor in Case Builder to Process Designer to add extra functionality and back to Step Editor to continue with the process modeling. The Business Analyst can repeat the round tripping process as many times as needed during the design process for a task.

In this section, we discuss the following topics:

- ▶ Common workflow features available in Process Designer.
- ▶ Overall procedure to update the process map of a task in Process Designer.
- ▶ Specific steps to update the sample solution “Credit Card Dispute” to include a component step.

12.1.1 Common workflow features in Process Designer

The common workflow features available in Process Designer but not yet supported by Step Editor are:

- ▶ Conditional routing based on expressions

Step Editor only supports conditional routing based on response. Using Process Designer, the user can augment the process map of a task with routing logic based on expressions of case properties and process data.

- ▶ Component step

A component step enables IBM FileNet Process Engine (Process Engine) to route work to operations in custom Java or Java Message Services (JMS) components. A component step is associated with a component queue configured for one or more operations in the external component.

One of the built-in and commonly-used component steps is CE_Operations. Using CE_Operations, users can perform many Content Engine operations, supported by a Java adaptor, ContentExtendedOps.jar. For example:

- Retrieve property values from a document and update case properties
- File a document into a case folder
- Create a document

► System instructions

System instructions are the built-in Process Engine functions to perform logic control and functionality in a workflow. The notable system instructions include but not limited to:

- General system functions such as Assign, DbExecute, Call, and many others:
 - Using **Assign** system instruction, the user can update case properties
 - Using **DbExecute**, the user can retrieve data from an external data source to update case properties
- Time limits for processing such as BeginTimer and EndTimer.
- Web services such as Invoke to invoke external services from ILog JRules, WebSphere Process Server, and other web service providers

► Submap

In Process Engine, a submap step represents a call from a current process map to another map in the same process definition. One of the uses for submaps is exception handling such as expiration of a deadline, malfunction in processing, process termination, and so forth.

► Deadline

The Step Editor does not allow users to specify the deadline for a particular task or for a process. It allows deadlines for steps only. Using Process Designer, the user can add a deadline to a task or a process to indicate an amount of time required to complete a task or a process.

The list does not include all the available features of Process Designer. For detailed information about Process Designer and its features, consult the IBM FileNet P8 documentation.

12.1.2 Update a process map of a task in Process Designer

The following lists the general procedure to augment an existing process map of a task:

1. Make sure to close the solution in Case Builder (solution should not be checked out).
2. Edit the solution in Process Designer by clicking **File** → **Solution** → **Edit** and performing the following steps:
 - a. Browse to ***design_object_store_name*** → **IBM Case Manager** → **Solutions** → ***solution_name folder***.

- b. Select the **Solution Definition** file under the solution_name folder. Do not choose workflow definition collection (XPDL) or PE Configuration file.
 - c. If there is more than one case type, select the case type that contains the process map you want to modify.
 - d. Update the process configuration (if needed) by clicking **View** → **Configuration**.
 - e. If there is more than one task in a case type, click **View** → **Workflow** → **task_name** where *task_name* is the task associated with the process map you want to edit.
 - f. Add the desired steps and routing logic.
3. Validate the solution in Process Designer.

The validation is performed against the configuration file of the solution and not against PE region configuration. In other words, the validation is performed offline.
 4. Save the solution in Process Designer by clicking **File** → **Solution** → **Save** or **Save** and **Close**.

Note: Do not use the Process Configuration Console to update the configuration for a region. The changes made in the Process Engine Configuration Console will not be saved to the solution package. Also, the update will be lost when the user resets the test environment.

12.1.3 Update the sample solution with a component step

To illustrate the round tripping function in IBM Case Manager using the built-in component queue CE_Operations, we will modify the Send Confirmation Letter task in our sample solution Credit Card Dispute and add a component step associated with the CE_Operations component queue to send letters through third party letter generation software. To update the process map associated with the Send Confirmation Letter task, we follow the general procedure specified in 12.1.2, "Update a process map of a task in Process Designer" on page 403.

This section specifies the specific steps to register the CE_Operations component queue and add a component step associated with CE_Operations.

- ▶ Download ContentExtendedOps.jar, a java adaptor for CE_Operations, from the Workplace XT server. This step is not needed if the Process Engine version is 5.0 FixPack 1 or higher.
- ▶ Update the PE configuration file of Credit Card Dispute solution with component queue CE_Operations.

Note: IBM Case Manager version 5.0 does not include the built-in CE_Operations. Therefore, you need to register it to the PE configuration file of your solution. Starting with Process Engine 5.0 FixPack 1, CE_Operations is available to a solution by default.

- ▶ Add a component step.
- ▶ Specify component operations desired for the component step.

For detailed information about the CE_Operations component queue and its operations, consult the IBM FileNet P8 documentation.

12.2 Configure a component queue using Process Designer

In this section, we illustrate the steps to configure the CE_Operations component queue to use in the Send Confirmation Letter task of our sample solution “Credit Card Dispute”. The operations provided for our CE_Operations are included in ContentExtendedOps.jar which we can download from the P8 Workplace XT server.

Perform the following steps to configure a component queue using the Process Designer:

1. Log on to Workplace XT using an account that has access to the Process Designer applet and IBM Case Manager design object store as shown in Figure 12-1 on page 406.

Use the following format for the Workplace XT URL:

`http://server:port/WorkplaceXT`

Substitute values appropriate for your environment for the *server:port*. For our test system, we used the following URL:

`http://acmlab1:9080/WorkplaceXT`

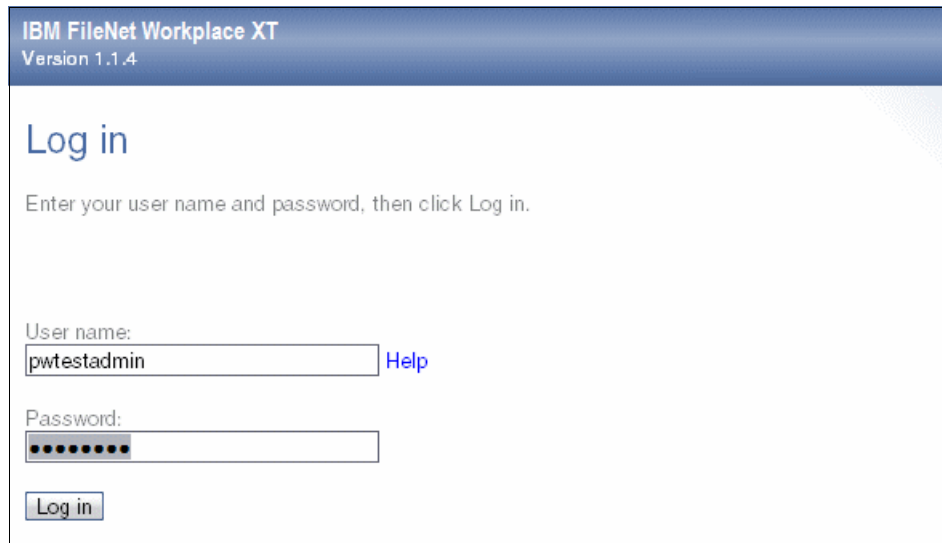


Figure 12-1 Logging in to Workplace XT

2. Click **Tools** → **Advanced Tools** → **Process Designer** as shown in Figure 12-2 to launch the Process Designer.

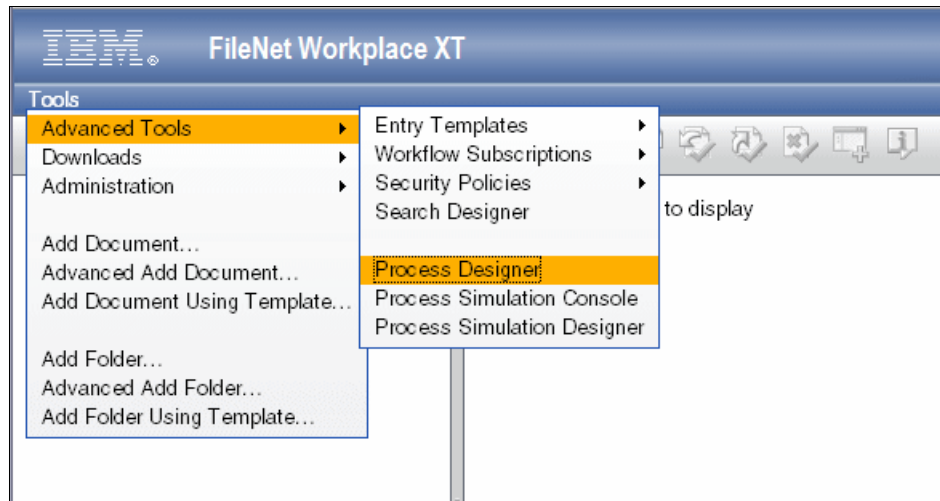


Figure 12-2 Opening the Process Designer

3. From the Process Designer, click **File** → **Solution** → **Edit** as shown in Figure 12-3 on page 407.

Important: Always open the solution definition file rather than the workflow definition file when editing workflows created with IBM Case Manager Builder. Opening the workflow definition file can corrupt your solution.

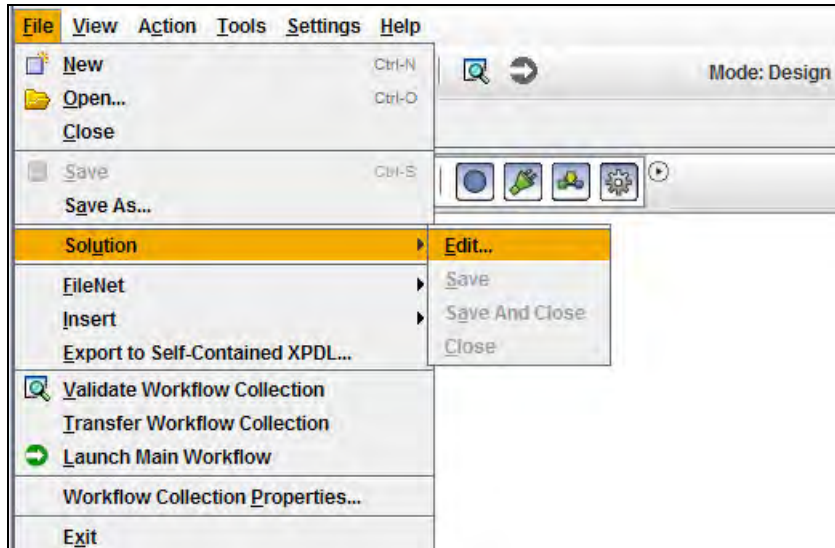


Figure 12-3 The Process Designer Solution Edit

4. Navigate to **case_manager_design_object_store_name** → **IBM Case Manager** → **Solutions** → **Credit Card Dispute** and select **Solution Definition**. Click the **Open** button as shown in Figure 12-4 on page 408.

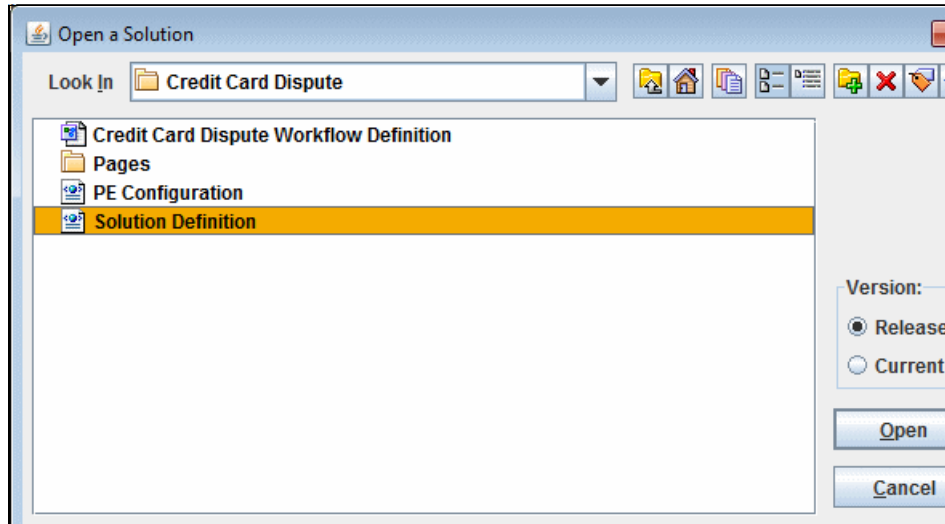


Figure 12-4 Open solution definition file

- After the workflow collection for case type Credit Card Dispute is loaded into Process Designer, click **View** → **Configuration** as shown in Figure 12-5.

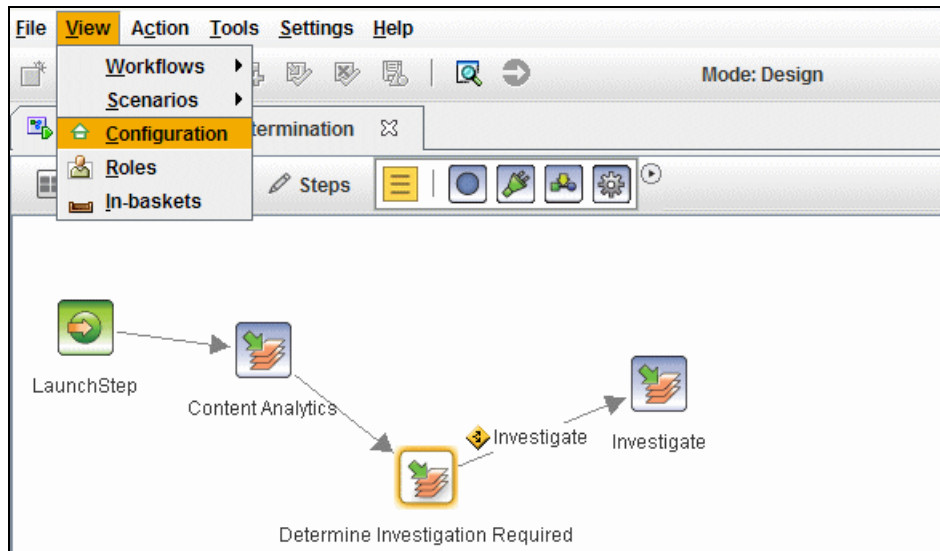


Figure 12-5 Configuration view in Process Designer

- When the configuration for the solution is loaded, right-click **Component Queues** as shown in Figure 12-6 on page 409 and select **New**.

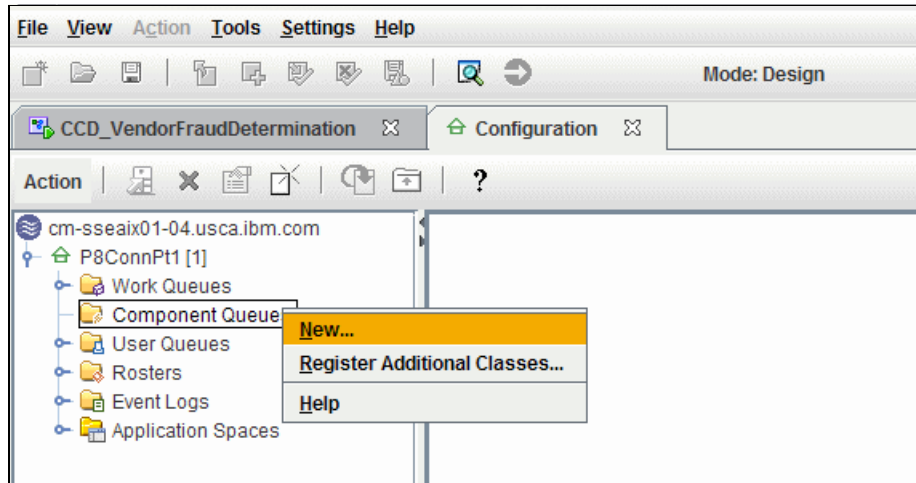


Figure 12-6 Creating a new component queue

7. Type a name for the new component queue, in our sample, CE_Operations, as shown in Figure 12-7. Click **Next**.

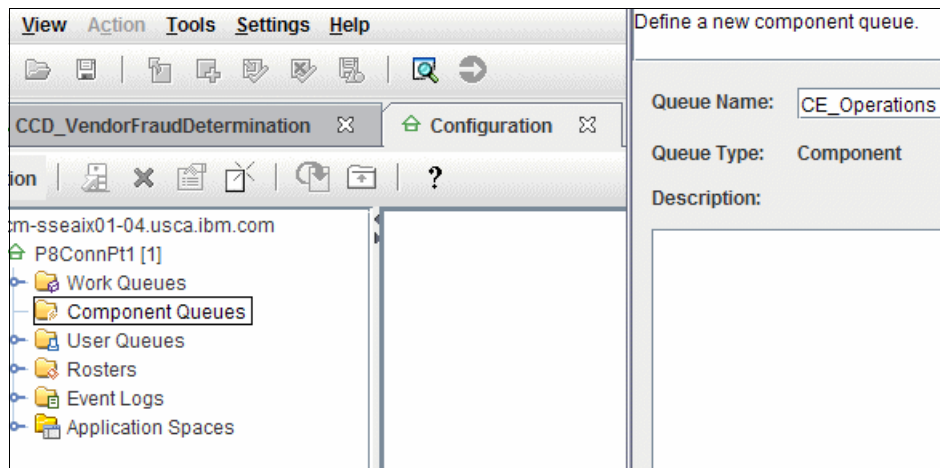


Figure 12-7 Naming the component queue in Add Component Queue Wizard window

8. Type the user name and password, and the configuration context for the JAAS credentials as shown in Figure 12-8 on page 410. Click the **Configure** button to configure the Java component.

Select and configure a component adaptor.

Adaptor

Adaptor:

Adaptor Properties

Concurrent Threads: Polling Rate:

Exception Submap: Startup Mode:

JAAS Credentials

User Name: Password:

Configuration Context:

Note: These changes may not take effect until the Component Manager is restarted.

Figure 12-8 Select and configure a component adaptor for a component queue

9. Select the Java class to use from the jar file and the available methods as shown in Figure 12-9 on page 411. Click **OK**.

Note: When using a component queue, there must be a Java jar file that contains the operations that are to be performed. This is normally supplied by your developers, a business partner, or a vendor. Here we use IBM FileNet P8 Java adaptor, ContentExtendedOps.jar. It is installed on Workplace XT server. This procedure for registering a Java adaptor is covered in the IBM FileNet P8 documentation.

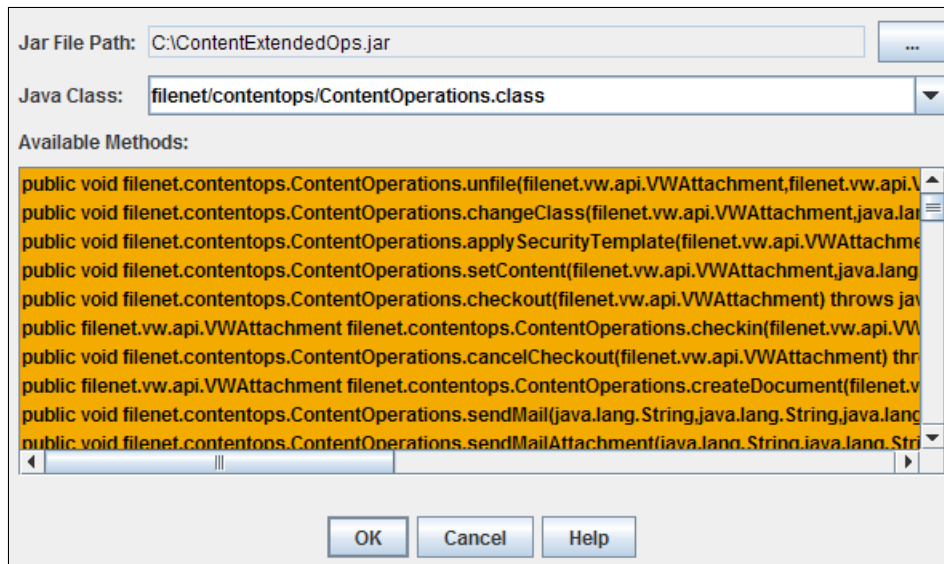


Figure 12-9 Select and configure Java class for component queue

10. Click the **Finish** button as shown in Figure 12-10 on page 412 to complete the initial component queue configuration.

Select and configure a component adaptor.

Adaptor

Adaptor:

Adaptor Properties

Concurrent Threads: Polling Rate:

Exception Submap: Startup Mode:

JAAS Credentials

User Name: Password:

Configuration Context:

Note: These changes may not take effect until the Component Manager is restarted.

Figure 12-10 Completing the initial queue configuration

11. Open the **CE_Operations** component queue by double-clicking it. Select the **Operations** tab as shown in Figure 12-11.

General System Fields Data Fields Indexes Security Adaptor **Operations**

Operations

Name

Operation Description

Parameters		
Name	Type	Access

Note: These changes may not take effect until the Component Manager is restarted.

Figure 12-11 Configure operations for CE_Operations component queue

12. Click the **Import** icon in the Operations tab and import the required Java method. For this sample, we import all available methods as shown in Figure 12-12. Click **OK** to import the selected methods to the component queue.

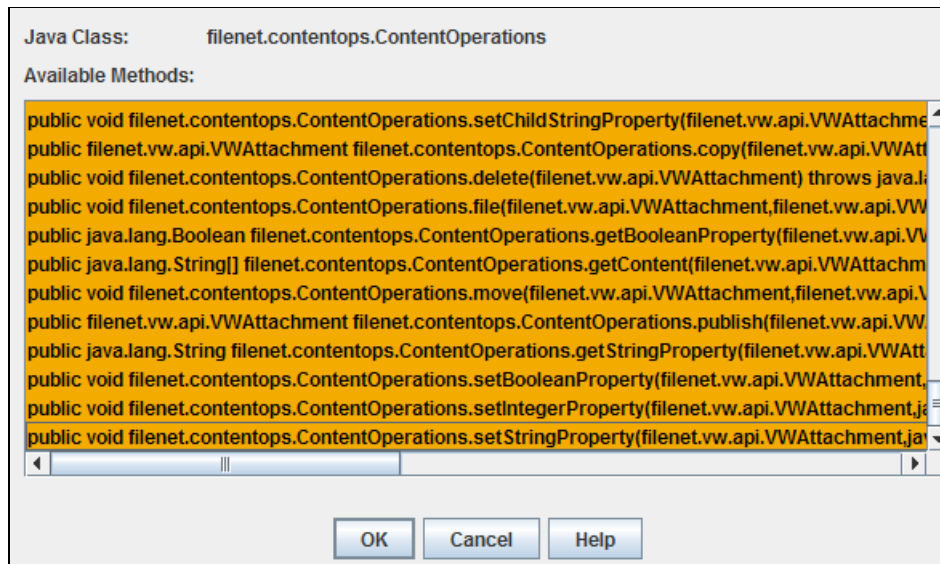


Figure 12-12 Adding the component operations

13. Click **OK** to save the changes. For each operation, the parameters for the operation are automatically added in the parameter pane as shown in Figure 12-13 on page 414.

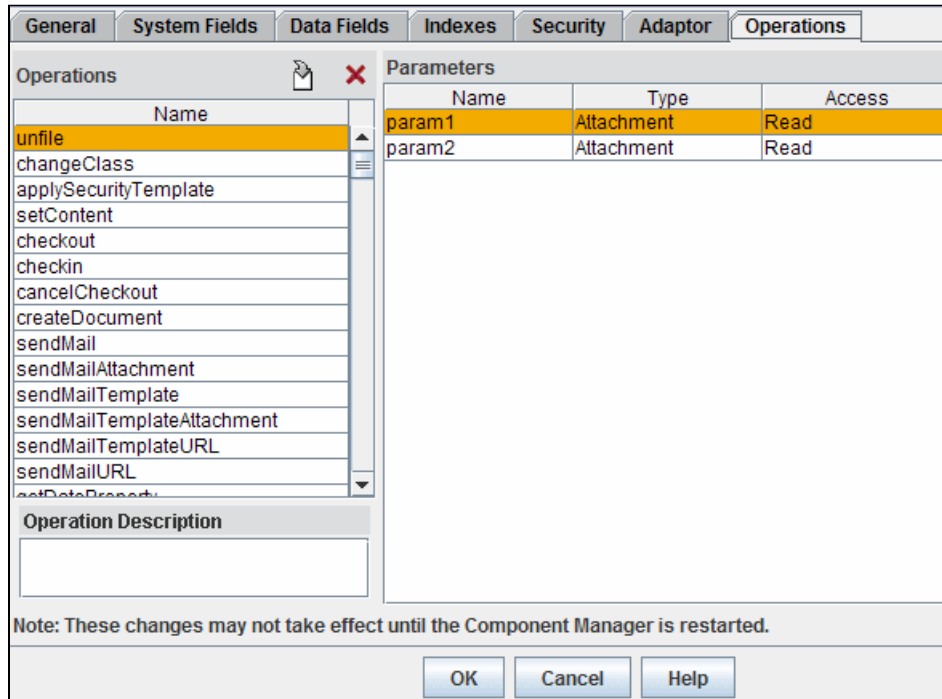


Figure 12-13 Component queue with operations added

- 14.(Optional) Save the configuration changes to the PE Configuration file by clicking **File** → **Solution** → **Save**.

12.3 Add a component queue step using Process Designer

In this section, we add a component step in the process map (or workflow) associated with the Send Confirmation Letter task. This is the round tripping we referred to earlier.

The operations we choose for this step are **searchForOne** and **sendMailAttachment**. Below are the general descriptions for these two operations. For detailed information about them, consult the IBM FileNet P8 documentation.

- ▶ **searchForOne**
Returns the first object that satisfies the search criteria by executing the simple search template or stored search specified in the parameter for the operation.
- ▶ **sendMailAttachment**
Sends email with one or more attachments.

12.3.1 Create the search template and a sample document

To use the searchForOne operation, we need to create a search template and a document we want to search for.

1. Create a sample folder in the target object store named Email Templates.
2. Create a sample document named Confirmation Letter in the Email Templates folder.
3. Create a search template, Search Template for Sample Email, for use in the searchForOne operation.

Disclaimer: The procedure listed below is to create a simple search template for use with our sample Credit Card Dispute. This procedure is not the only way to create a search template.

To create a simple search template, use the following steps:

1. Open Search Designer from the Workplace XT Welcome window by clicking **Tools** → **Advanced Tools** → **Search Designer** as shown in Figure 12-14.

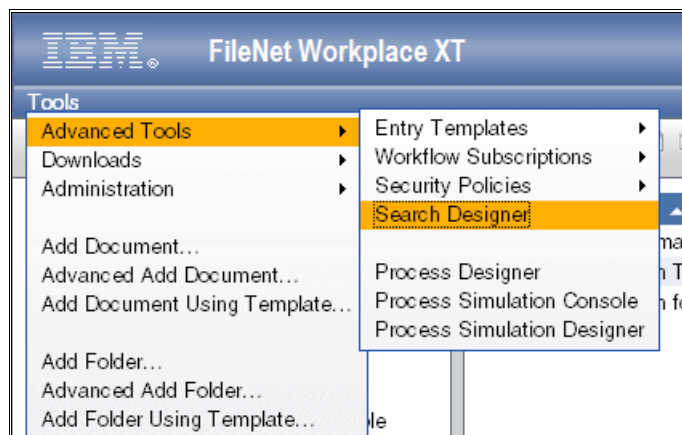


Figure 12-14 Opening Search Designer to create search template

2. After Search Designer opens, select an object store. In our sample, select **CMTOS** by highlighting its name and clicking the **right arrow** to move it from the Available Object Stores field to the Selected Object Stores field as shown in Figure 12-15.

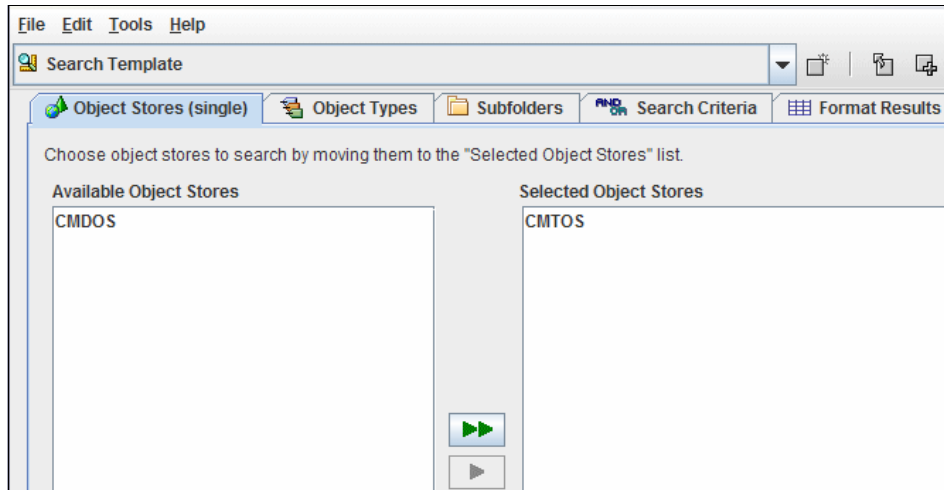


Figure 12-15 Select object store

3. Click the **Object Types** tab. Select the **Document** check box.
4. Select **Editable** from the View dropdown menu.
5. Select **Document** from the Object Subclass dropdown menu. The result is shown in Figure 12-16.

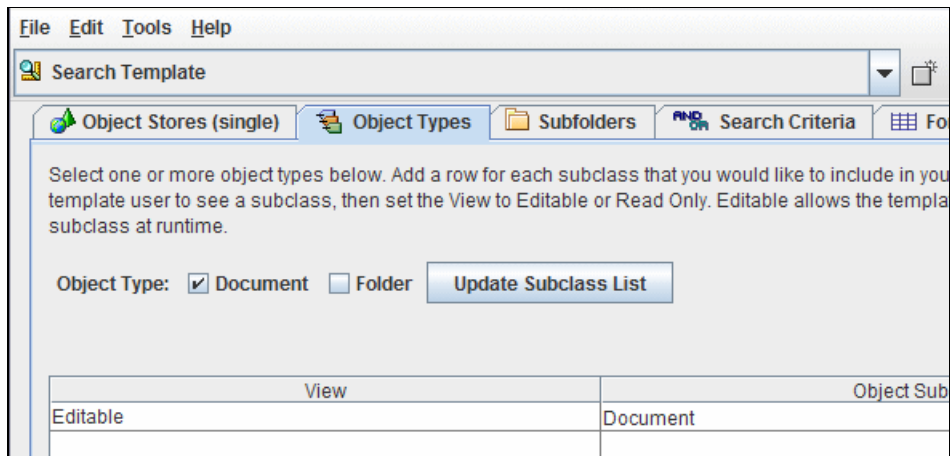


Figure 12-16 Specify object type

6. Click the **Subfolders** tab. Select **Editable** from the View dropdown menu.
7. Select the **Include subfolders** check box.
8. Select the subfolder to search in by clicking the **Select a Folder** icon in the upper right of the pane. Select **Email Templates** (created earlier) from the CMTOS object store. The result is shown in Figure 12-17.

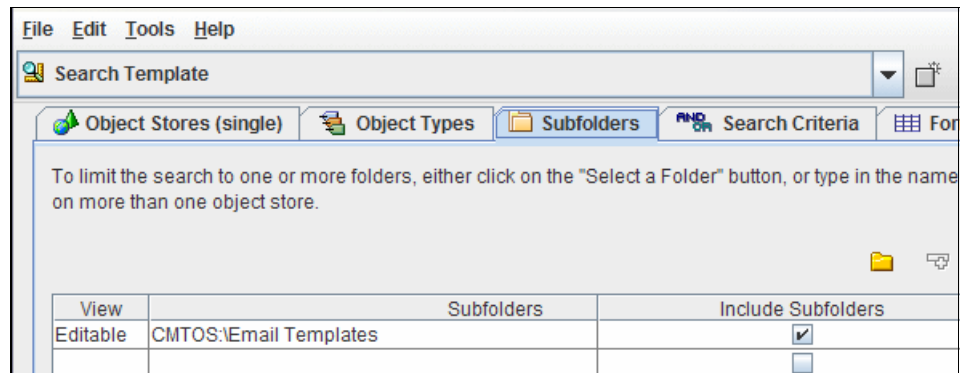


Figure 12-17 Select subfolders

9. Click the **Search Criteria** tab and select the following values:
 - a. For View, select **Editable**.
 - b. For Property, select **Creator**.
 - c. For Operator, select **is equal to**.
10. Click the **search ...** icon, then type the name of the user who created the document earlier. Select that user and click **OK**. The result is shown in Figure 12-18.

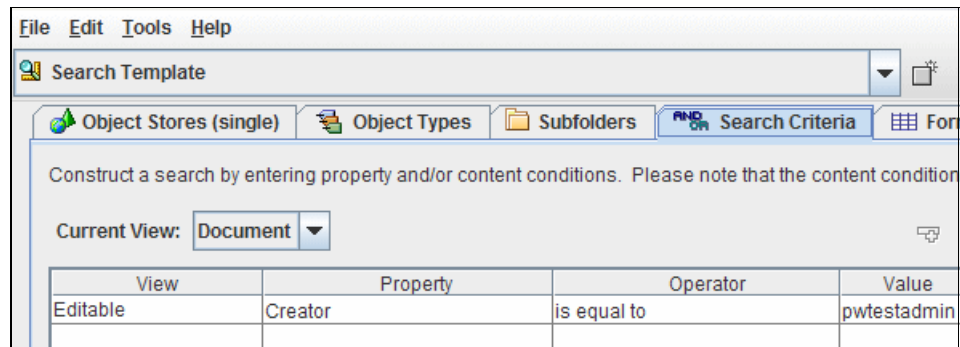


Figure 12-18 Specify search criteria

11. Click the **Format Results** tab. We leave the format result as default as shown in Figure 12-19 on page 418.

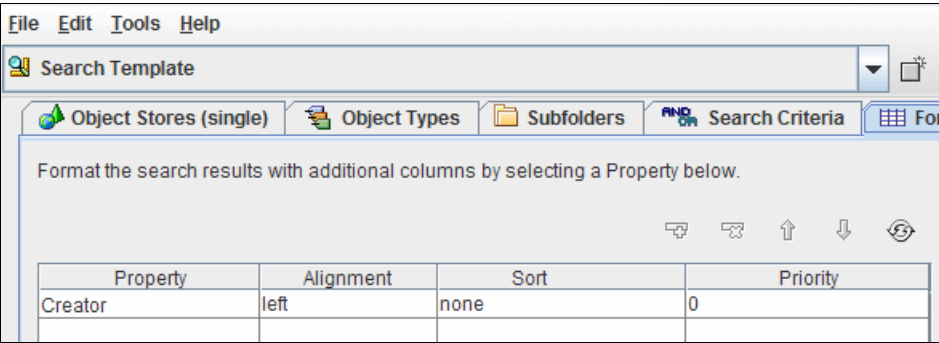


Figure 12-19 Specify format results

12. Save and check in the search template into the Email Templates folder by clicking the **Add New** icon on the Search Designer toolbar. We assume you know the procedure to check a document object into an object store.

After this step, the subfolder Email Templates should contain a sample email (document) and a search template as shown in Figure 12-20.

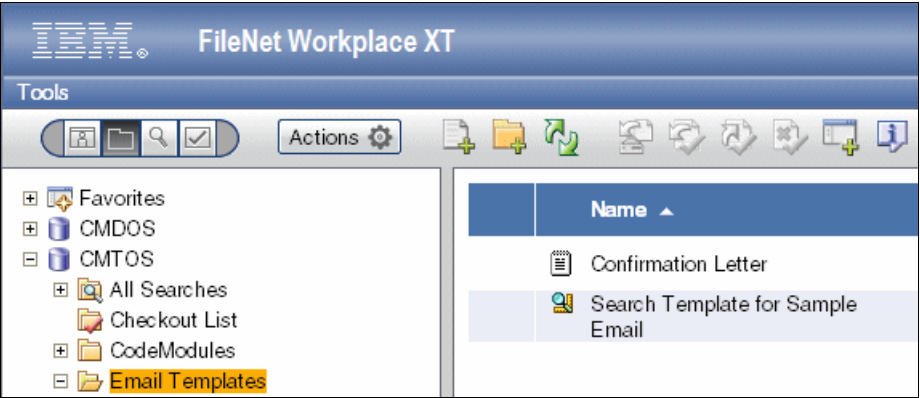


Figure 12-20 Sample “Email Templates” content

12.3.2 Update the process map with a component step

In this section, we describe the steps to augment the process map of a task with a component step in Process Designer:

1. Load the process map for the Send Confirmation Letter task in Process Designer.

Otherwise, open Process Designer and navigate to ***case_manager_design_object_store_name*** → **IBM Case Manager** → **Solutions** → **Credit Card Dispute**. Then, select **Solution Definition**. Finally, click **View** → **Workflows** and select the process map for “Send Confirmation Letter”.

CCD_VendorFraudDetermination CCD_SendConfirmationLetter

Maps Steps

LaunchStep

2. Click the **Workflow Properties** tab, then click **Data Fields** tab to add workflow data fields we need to use as parameters for our `searchForOne` and `sendMailTemplate` operations.

Workflow Properties					
General	Data Fields	Attachments	Workflow Groups	Maps	Milestones
Data Fields					
Name	Type	Merge Type	Expression	Description	
SolutionIdentifier	String	Default	"CCD_Credit Card Dispute"		
FromCaseWorker	String	Override	"Case Worker"	change to valid name	
RecipientEmail	String	Override	"Claimant Email"	change to valid email	
EmailSubject	String	Override	"Confirmation"		
EmailBody	String	Override	"Confirmation Attached"		
	Boolean	Override	true		

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3. Click the **Attachments** tab and add the attachments needed for searchForOne and sendMailAttachment operations as shown in Figure 12-23. These are single attachments.

For SearchTemplate, we assign the value of the search template we created in the previous steps. Browse for the search template in the Email Templates folder.

Workflow Properties				
General Data Fields Attachments Workflow Groups Maps Milestones				
Attachments				
	Name	Array	Value	Description
	SearchTemplate	<input type="checkbox"/>	Search Template for Sample Email	search template for the email
	SampleEmail	<input type="checkbox"/>		store the email returned from search

Figure 12-23 Add attachment fields for Send Confirmation Letter

4. Add a component step to the process map of the Send Confirmation Letter.

The workflow currently has only the single launch step. To add a component queue step, use the following steps:

 - a. Click the **Component Step** icon and drag it onto the workflow area.
 - b. Connect the launch step to the component step.
 - c. Name the component step Send Mail.

Figure 12-24 shows the process map after the modification.

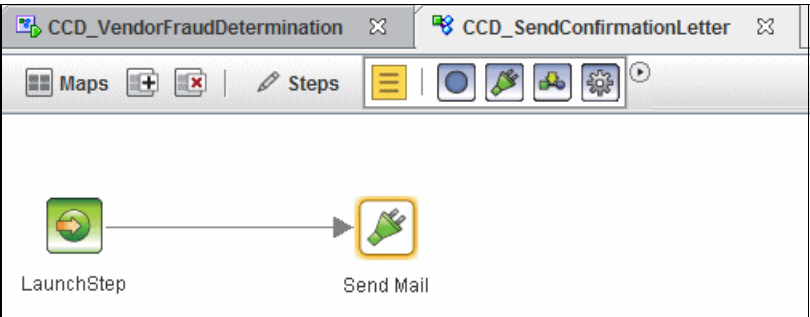


Figure 12-24 The process map for Send Confirmation Letter with component step added

5. Select the component step **Send Mail** and add operations for it by performing the following steps:
 - a. Click the **Add** icon under Operations section. When the Operation Selection window displays, select the **searchForOne** operation. Then click

OK. The operation is added to the Operations section along with its required Operations Parameters.

- b. For the search parameter, type the Search Template name in the expression field to as shown in Figure 12-25.
- c. For the objectType parameter, type document. See Figure 12-25.
- d. For the itemId parameter, type 3. The value 3 is the itemId attribute within the <whereprop> tags of the content of the search template. To locate the itemId, open the content of the search template in a text or XML editor and look for <whereprop> tag. Figure 12-25 shows the value 3 for itemId for our sample search template.
- e. For the value parameter, type Creator. The value Creator is the corresponding value for itemId in the <whereprop> tag as shown in Figure 12-25.
- f. For the return_value parameter, select the SampleEmail attachment. We use the SampleEmail for the sendMailAttachment operation to send mail to a user. See Figure 12-26 on page 422.

```
- <where>
- <eq>
  - <whereprop editproperty="editable"
    itemId="3" name="Creator"
    objectType="document"
    symname="Creator">
    <propdesc datatype="typestring"
      haschoices="false"
      hasmarkings="false"
      symname="Creator" />
    </whereprop>
    <literal>pwtestadmin</literal>
  </eq>
</where>
```

Figure 12-25 Locating <whereprop> attribute for Search Template for Sample Email

Workflow Properties		Send Mail	
General		Routing	Custom Attributes
Step Name			
Send Mail			
Operations		Operation Parameters	
Name	Component	Name	Type
searchForOne	CE_Operations	param1	Attachment
sendMailAttachment	CE_Operations	param2	String
		param3	Integer[]
		param4	String[]
		return_value	Attachment
			Expression
			SearchTemplate
			"document"
			{3}
			{"Creator"}
			SampleEmail

Figure 12-26 Sample searchForOne operation

- g. Perform the same steps for the sendMailAttachment operation and its parameters. For detailed information about the sendMailAttachment, consult the IBM FileNet P8 documentation. Figure 12-27 shows the sendMailAttachment for our sample solution.

Workflow Properties		Send Mail	
General		Routing	Custom Attributes
Step Name			
Send Mail			
Operations		Operation Parameters	
Name	Component	Name	Type
searchForOne	CE_Operations	param1	String
sendMailAttachment	CE_Operations	param2	String
		param3	String
		param4	String
		param5	Attachment[]
			Expression
			FromCaseWorker
			RecipientEmail
			EmailSubject
			EmailBody
			{SampleEmail}

Figure 12-27 Sample sendMailAttachment operation

6. Click the **Validate** icon to validate the process maps for the solution.
7. From the menu base, click **File** → **Solution** → **Save** and **Close** to save and close the solution.
8. Load the process map in the Step Editor: From IBM Case Manager Builder window, edit the Credit Card Dispute solution, and open the SendConfirmationLetter task in the Step Editor. Note that the new component step has been added to the System lane as shown in Figure 12-28 on page 423.

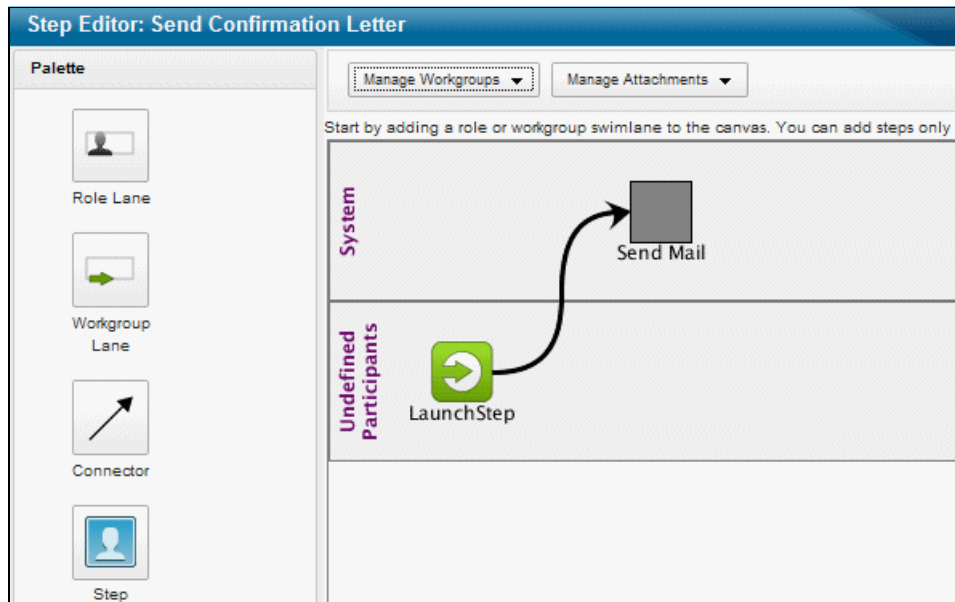


Figure 12-28 Send Confirmation Letter task in Step Editor after being updated in Process Designer

12.3.3 Validate the solution

You should test the solution to validate the solution architecture. Because IBM Case Manager supports the development of the solution iteratively, users can deploy and test the solution as many times as needed.

1. From IBM Case Manager Builder, click the **Deploy** button for to deploy the solution.
2. From IBM Case Manager Builder, click the **Test** button to test the solution. After clicked, IBM Case Manager Builder sends users to the solution space of the solution in Lotus Mashup server. From there, users can create and process cases.

Note: If you use component queues, make sure to start the Component Manager on your Workplace XT server.



Creating and deploying an iWidget

This chapter describes creating and deploying a simple but useful iWidget which can be used as a starting point for you to extend IBM Case Manager with your own iWidgets.

This chapter covers the following topics:

- ▶ Creating and deploying an iWidget overview
- ▶ Demonstrating the usage of the new iWidget
- ▶ Building the new iWidget
- ▶ Deploy the iWidget in the Lotus Mashup Center and add it to the Add Case mashup page
- ▶ Discussion of the iWidget code

13.1 Creating and deploying an iWidget overview

We use a sample application to show you how to create and deploy an iWidget. In the sample application, the business wanted the ability to access a backend server and display the customer details based on the credit card number while adding a new case so that the customer service people can verify those details without having to access another window.

The method shown here can be used to retrieve a list of the customer's statements or transactions based on credit card number while the case is being added. It can also be used for more complex data validation.

We have created a new Add Case page called **Interactive Add Case** and created a new iWidget called **Customer Details** to achieve these requirements. We begin by showing what the implementation looks like, and then show how to build it.

Note that the backend database that returns the customer information based on credit card numbers in our example is mimicked by code that only returns the customer information for credit card number 9999000011112222. To use a real backend server would defeat the point of providing an example that you can easily recreate in your own Case Management systems.

In the real world, a `dojo.xhrget()` call would be made to get the customer information based on credit card number. The REST service can be a feed created through InfoSphere Hub, or a service developed on your own. If you need to access a service that resides on a separate server, Lotus Mashup proxy can be used to redirect the REST service call.

Note that a REST service can be created in other ways and that the proxy is only required if the services reside on a separate server than the mashup server.

An important point to remember when writing iWidget code is that the code is run on a client, not on a server. Therefore, when a `dojo.xhrGet()` call is made, it must be able to access a server directly from the client. This is why we use intermediate REST servers or take advantage of the mashup's proxy mechanism.

REST servers using JSON responses are used because JSON interfaces easily with the dojo widgets, making grids, tables and other common tasks easy to implement.

13.2 Demonstrating the usage of the new iWidget

To demonstrate the usage of the new iWidget, follow these steps:

1. Create a new case with the sample solution. See Figure 13-1.

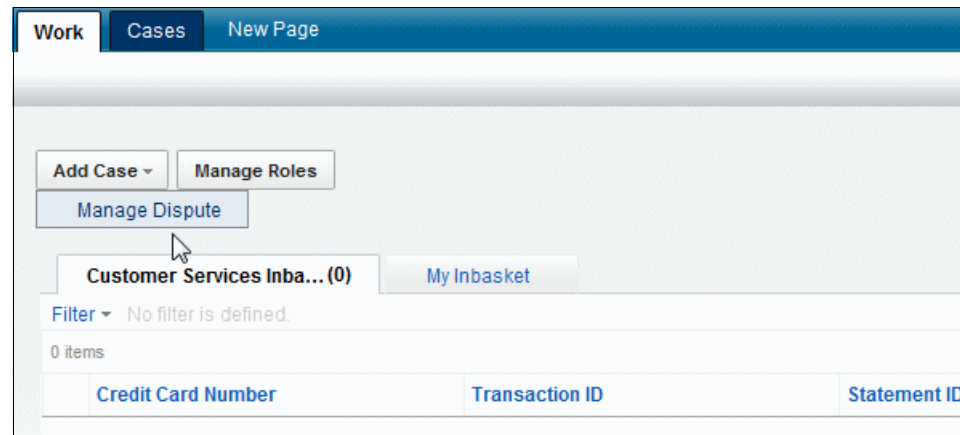


Figure 13-1 Creating a new case

2. There is a new **Interactive Add Case**, which is a modified copy of the Add Case page that includes the new iWidget **Customer Details**. See Figure 13-2 on page 428.

The Customer Details iWidget is wired to the Case Data iWidget to receive CaseInfoChange events so it can watch to see if the Credit Card Number field changes.

Work Cases **Interactive Add Case** New Page

Manage Dispute

Add Cancel

Case Data

Credit Card Number:

Statement ID:

Transaction ID:

Customer Details

Figure 13-2 Adding a case with the new Interactive Add Case page

3. In our first attempt, we enter credit card number 1234000056780000. This number does not exist on our backend server, so an error message is returned. Through the events, we can both monitor and set the fields (properties) in the Case Data widget. See Figure 13-3.

Work Cases **Interactive Add Case** New Page

Manage Dispute

Case Data

Credit Card Number:

Customer Details

The page at <http://acmdev:9080> says:
 Credit card number 1234000056780000 not found
OK

Figure 13-3 Entering a credit card number that does not exist

4. On our second attempt, we entered credit card number 9999000011112222. This is a valid credit card number in our system, so the customer's information displays in the Customer Details widget. See Figure 13-4.

The screenshot shows a web application interface with a top navigation bar containing 'Work', 'Cases', 'Interactive Add Case' (selected), and 'New Page'. Below the navigation bar is a 'Manage Dispute' section with 'Add' and 'Cancel' buttons. The main content area is divided into two panels: 'Case Data' and 'Customer Details'. The 'Case Data' panel contains a 'Credit Card Number' field with the value '9999000011112222' and a 'Statement ID' field. The 'Customer Details' panel displays the following information: 'Mr Fictional Character, 46 Unknown Boulevard, Los Angeles CA. Tel: (666) 12-34567'.

Figure 13-4 Entering a valid credit card number

In 13.3, “Building the new iWidget” on page 429 and in 13.4, “Deploy the iWidget in the Lotus Mashup Center and add it to the Add Case mashup page” on page 437, we provide detail steps in building and deploying the iWidget. In 13.5, “Discussion of the iWidget code” on page 449, we discuss how the iWidget code works.

13.3 Building the new iWidget

We will create our new iWidget using Eclipse. Eclipse is a downloadable Java development environment covered under the Eclipse Public License and available for no additional cost at the following URL:

<http://www.eclipse.org>

DISCLAIMER OF WARRANTIES: The accompanying code is sample code created by IBM Corporation. This sample code is not part of any standard or IBM product and is provided to you solely for the purpose of assisting you in the development of your applications. The code is provided *as is*, without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample code, even if they have been advised of the possibility of such damages.

IMPORTANT: The iWidget was built using **Eclipse 3.5.1**. If you use another version or other development tools, you might have to modify the code to make it work.

To build the iWidget, perform the following steps:

1. Open Eclipse and create an empty project by clicking **File** → **New** → **Project**.
2. Navigate to **General** → **Project** (see Figure 13-5) and click **Next**.

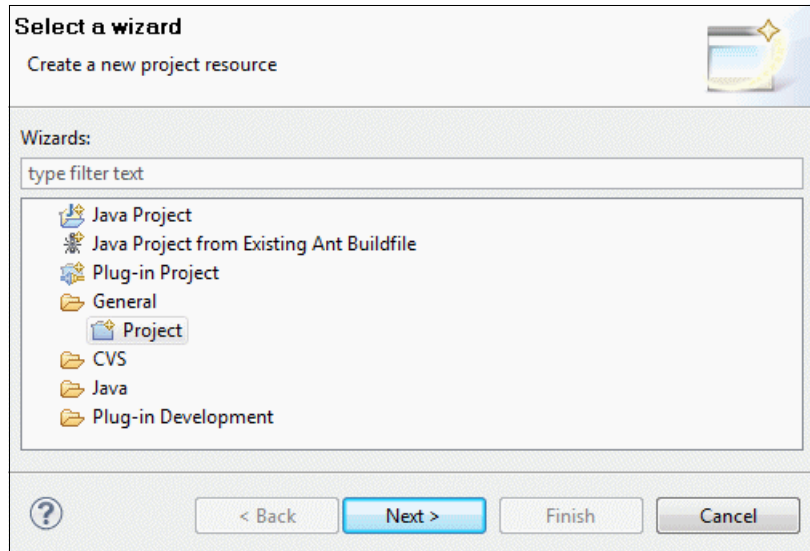


Figure 13-5 Selecting the project type

3. For the Project Name field, type Customer Details (Figure 13-6 on page 431) and click **Finish**.

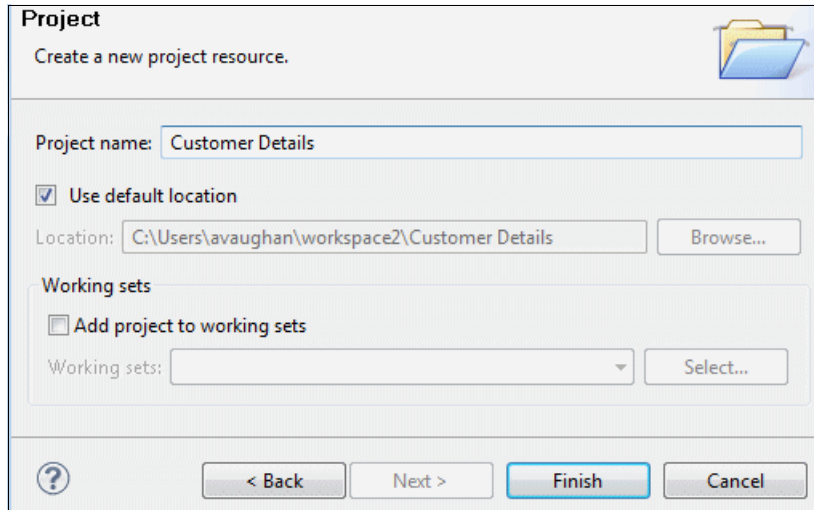


Figure 13-6 Naming the project

4. The project will be deployed as a war file. We need to create the folder structure for that. Right-click **Customer Details**, select **New** → **Folder**, and create a folder named Web Content. See Figure 13-7.

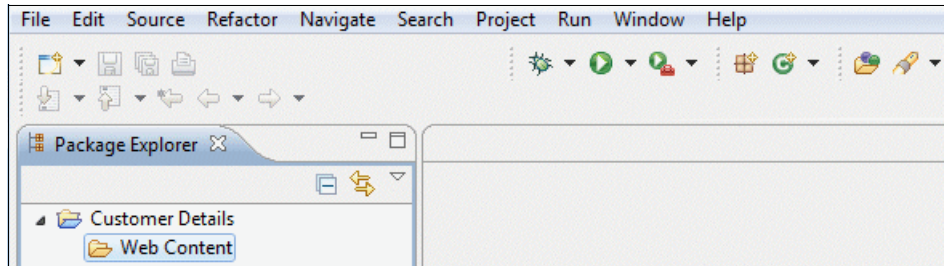


Figure 13-7 Creating the folder structure for deployment

5. In the Project Explorer pane, right-click the **Web Content** folder, select **New** → **Folder**, and create a folder named WEB-INF. See Figure 13-8.

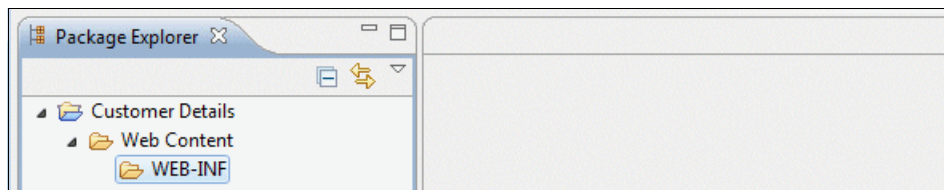


Figure 13-8 Creating the WEB-INF folder

6. Create three configuration files in the WEB-INF directory to allow mashups to use our iWidget. These are catalog.xml, mashup.properties, and web.xml.

To create the files, from the Project Explorer pane, right-click the **WEB-INF** directory, select **New** → **File**, and create the three files.

Note: By replacing the strings “CustomerDetails” and “Customer Details” in these three configuration files with your own widget names, these files should work for any basic iWidget you want to develop.

- To create catalog.xml file:

Open the **catalog.xml** file by double-clicking it and copy and paste the text in Example 13-1.

Example 13-1 catalog.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<catalog>
  <category name="Sample">
    <entry id="CustomerDetails" unique-name="Customer Details">
      <title>
        <nls-string lang="en">Customer Details</nls-string>
      </title>
      <description>
        <nls-string lang="en">Customer Details</nls-string>
      </description>
      <definition>CustomerDetails.xml</definition>
      <content>http://www.ibm.com</content>
      <preview>http://www.ibm.com</preview>
      <icon>CustomerDetails.png</icon>
    </entry>
  </category>
</catalog>
```

- To create mashup.properties file:

Open the **mashup.properties** file and copy and paste the text in Example 13-2.

Example 13-2 mashup.properties

```
contextRoot=CustomerDetails
componentName=com.mycompany.CustomerDetails
```

- To create web.xml file:

Open the **web.xml** file and copy and paste the text in Example 13-3.

Example 13-3 web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app id="WebApp_ID" version="2.4"
xmlns="http://java.sun.com/xml/ns/j2ee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
http://java.sun.com/xml/ns/j2ee/web-app_2_4.xsd">
  <display-name>Customer Details</display-name>
  <welcome-file-list>
    <welcome-file>CustomerDetails.xml</welcome-file>
  </welcome-file-list>
</web-app>
```

7. Create an Ant Build file for Eclipse to package the war file using these steps:
 - a. From the Project Explorer pane, right-click the **Customer Details** folder, select **New** → **File** and name the file **build.xml**. This build file will be suitable for any iWidget we create in Eclipse.
 - b. Open the **build.xml** file and copy the text from Example 13-4.

Example 13-4 build.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project name="package iWidget" default="createWar" basedir=".">
  <target name="createWar">
    <basename property="war.filename" file="${basedir}" />
    <war destfile="${war.filename}.war"
        webxml="Web Content/WEB-INF/web.xml" update="true">
      <fileset dir="Web Content">
        <exclude name="WEB-INF/web.xml" />
      </fileset>
    </war>
  </target>
</project>
```

Figure 13-9 represents the Eclipse project so far. It contains the configuration and build files at this point.

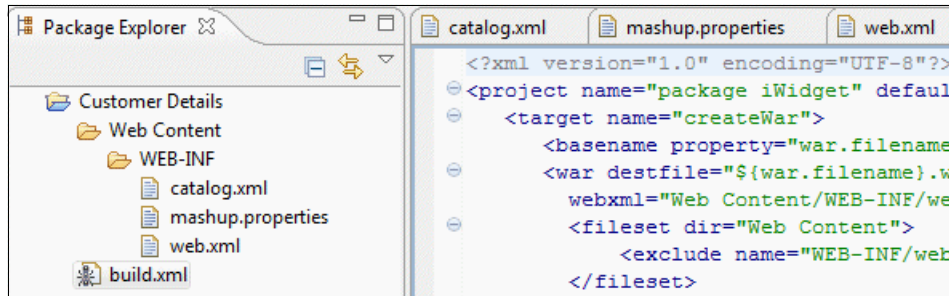


Figure 13-9 the Eclipse project so far

8. Create two more files: CustomerDetails.png and CustomerDetails.xml.

The .png file is an icon for the iWidget when displayed during mashup page editing. The .xml file is the actual iWidget code.

Find or create a .png icon file, and copy and paste it to the **Web Content** folder in the Project Explorer pane. Right-click the folder and select **Refresh** to make sure the file is there.

Create the CustomerDetails.xml iWidget file using the following steps:

- Right-click the **Web Content** folder in Project Explorer, select **File** → **New**, and name the file **CustomerDetails.xml**.
- Open the **CustomerDetails.xml** file, and copy and paste the text from Example 13-5.

Note: For explanation of the iWidget code, see 13.5, “Discussion of the iWidget code” on page 449.

Example 13-5 CustomerDetails.xml

```
<iw:iwidget id="ActiveCaseInbaskets"
  xmlns:iw="http://www.ibm.com/xmlns/prod/iWidget"
  allowInstanceContent="true"
  iScope="com.mycompany.CustomerDetails"
  supportedModes="view" mode="view" lang="en">

  <iw:payloadDef name="CaseItemField">
    <iw:payloadDef name="name" type="string" defaultValue=""
description=""/>
    <iw:payloadDef name="value" type="any" defaultValue=""
description=""/>
  </iw:payloadDef>
```

```

    <iw:event id="CaseInfoChanged" eventDescName="CaseInfoChangedDesc"
handled="true" onEvent="handleCaseInfoChanged" />

    <iw:eventDescription id="CaseInfoChangedDesc"
payloadType="CaseItemField"></iw:eventDescription>

    <iw:content mode="view">
        <![CDATA[

            <div id="_IWID_customerInfo" doctype="dijit.form.TextBox"></div>

<script type="text/javascript">

    dojo.provide("com.mycompany.CustomerDetails");

    dojo.declare("com.mycompany.CustomerDetails", null,
    {
        handleCaseInfoChanged: function(iEvent)
        {
            var field = iEvent.payload;

            if (field.name == "CCD_CreditCardNumber")
            {
                // here we would call a backend server to return the
customer
                // information based on credit card number using the
dojo.xhrGet()
                // call, but for this example we will fluff a result.
var customerInfo = dojo.byId("_IWID_customerInfo");

                if (field.value == "9999000011112222")
                {
                    customerInfo.innerHTML = "Mr Fictional Character, 46
Unknown Boulevard, Los Angeles CA. Tel: (666) 12-34567";
                }
                else
                    alert("Credit card number " + field.value + " not
found");
            }
        }
    });
</script>
]]>
</iw:content>
</iw:iwidget>

```

The iWidget project is now complete. See Figure 13-10.

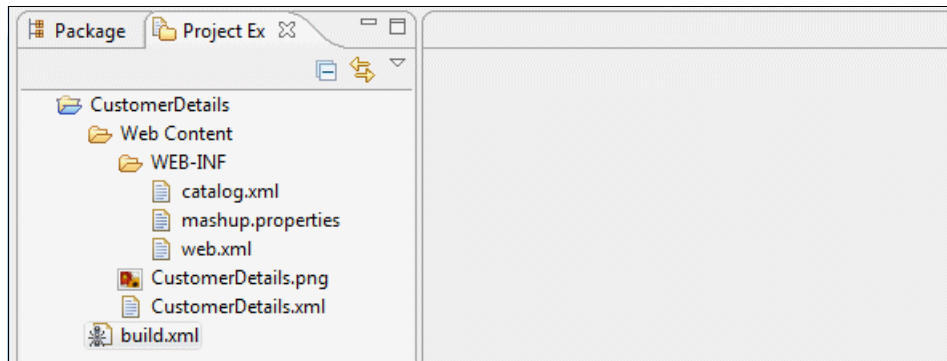


Figure 13-10 The iWidget project

9. Package the war file by right-clicking the **build.xml** file and select **Run As** → **Ant Build** (see Figure 13-11).

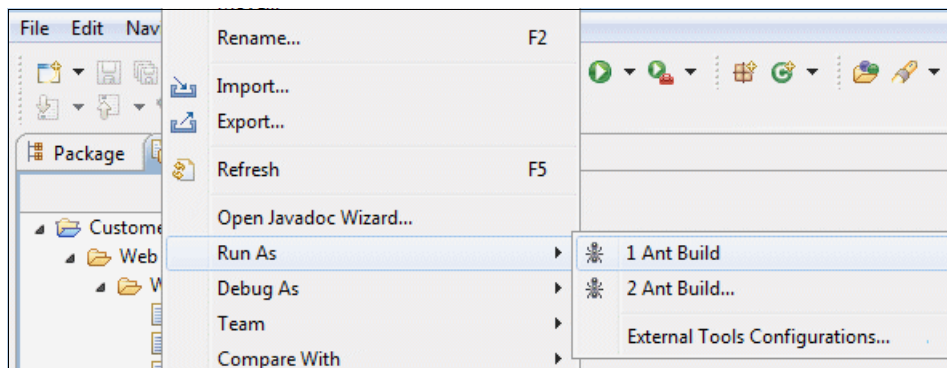


Figure 13-11 Running the build script to package the war file

You should see that the war file was successfully built in the console pane as shown in Figure 13-12.

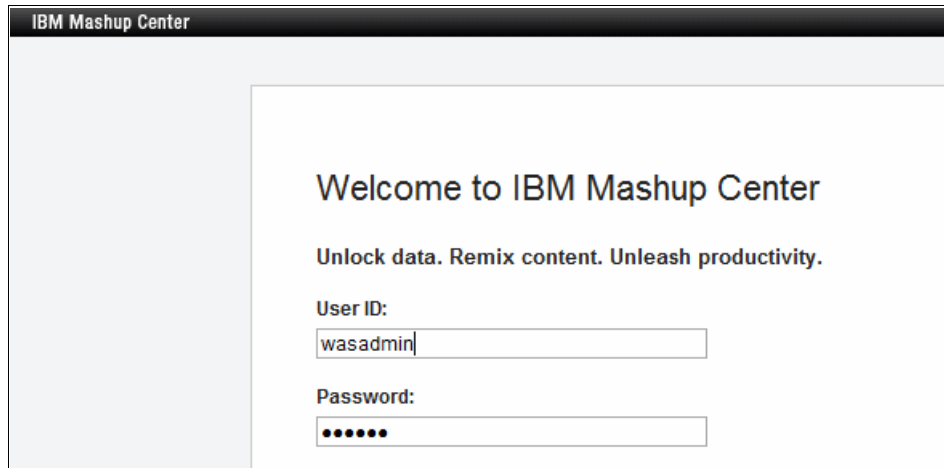


Figure 13-13 Logging on to Mashup Center

2. Open the mashups catalog and click **Actions** → **Open Catalog**. See Figure 13-14.

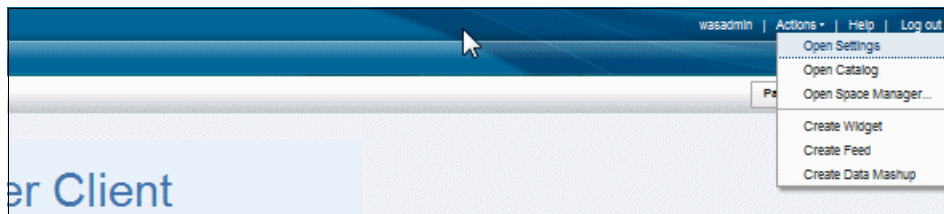


Figure 13-14 Opening the mashups catalog

3. To upload the Widget, click **Upload** → **Upload Widget or Gadget**. See Figure 13-15

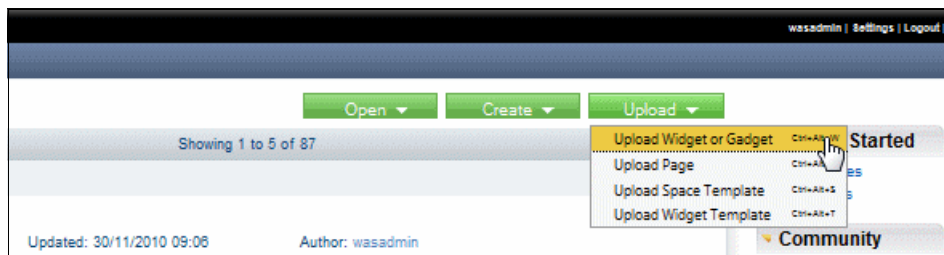


Figure 13-15 Uploading the iWidget

4. Select the type **iWidget Package (war)** as shown in Figure 13-16 on page 439 and click **Next**.

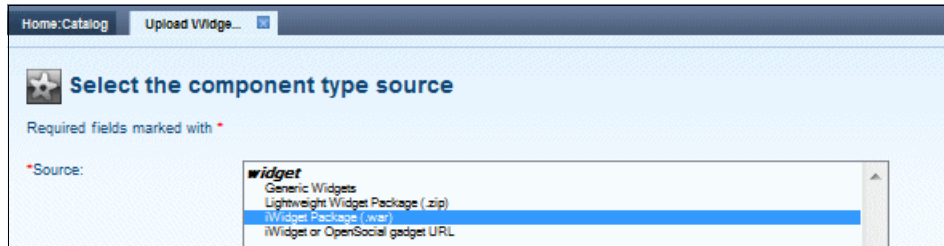


Figure 13-16 Selecting the iWidget type

5. Click **Browse** to locate the iWidget war package. See Figure 13-17.

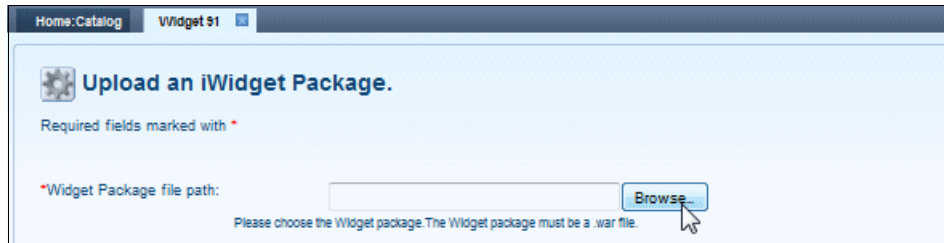


Figure 13-17 Browsing for the iWidget war package

6. Select the war file you just built in Eclipse, and click **Open**. See Figure 13-18.

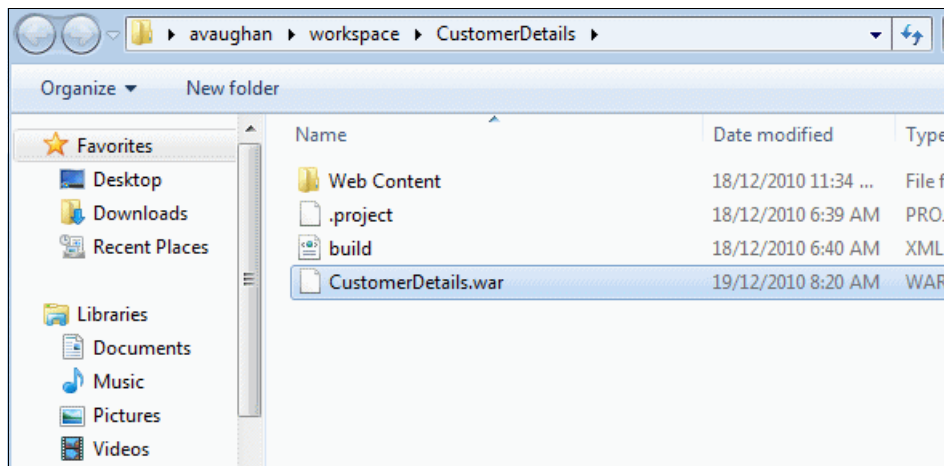


Figure 13-18 Selecting the iWidget war package

7. Click **Next** to continue.

8. Type the title **Customer Details** and a description of the iWidget, and then click **Finish**. See Figure 13-19.

The screenshot shows a web form titled "Specify the following information" for creating an iWidget. The form has several fields: "Title" (filled with "Customer Details"), "Description" (filled with "iWidget that looks up and displays customer details when the CCD_CreditCardNumber field changes in the Add Case page."), "Version" (filled with "1.0"), "Revision" (filled with "1" and a checked "Create new revision" checkbox), "Revision Comment" (empty), "Tags" (empty), and "Permissions" (radio buttons for "Public (All users can view the Widget)", "Private (Widget is invisible to all other users)", and "Custom (Custom permission settings)". At the bottom right are "Previous", "Finish", and "Cancel" buttons.

Figure 13-19 Specifying the iWidget information

9. Click **Add to Mashup Builder** to add the iWidget so that it is available for use. See Figure 13-20.

The screenshot shows a confirmation page titled "Widget successfully saved". It states "The Widget named Customer Details has been saved in the catalog." Below this is a section "What's Next?" with a list of actions: "Download Widget", "View Widget details", "Edit Widget details", "Edit Widget source", "Upload another Widget", "Add to Remote Catalog", "Add to Mashup Builder" (highlighted with a mouse cursor), "Add to Business Space", "Add to WebSphere Portal", and "Close Tab".

Figure 13-20 Adding the iWidget to Mashup Builder

10. Click **Finish** to complete. See Figure 13-21. The iWidget has been successfully added to Mashup Builder.

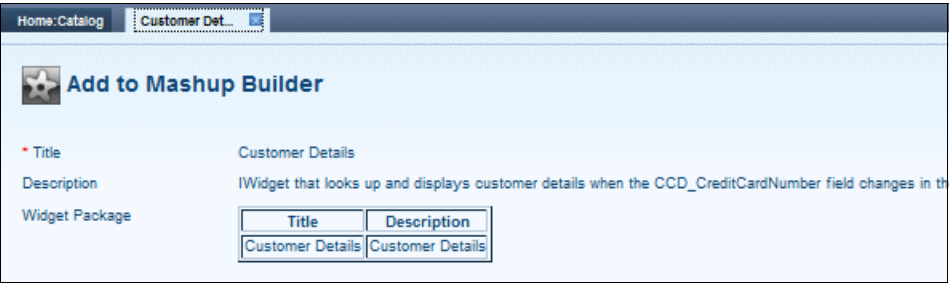


Figure 13-21 Adding iWidget to Mashup Builder

13.4.2 Create the Interactive Add Case page then add the iWidget to the Interactive Add Case page

We will now take a copy of the Credit Card Dispute Add Case page and call it **Interactive Add Case**. We will make this new page the default Add Case page and deploy the new iWidget to it.

To do so, follow these steps:

1. Log in with a user who has access to Content Engine (such as P8Admin).
1. In Case Client, click **Actions** → **Open Space Manager** (see Figure 13-22).

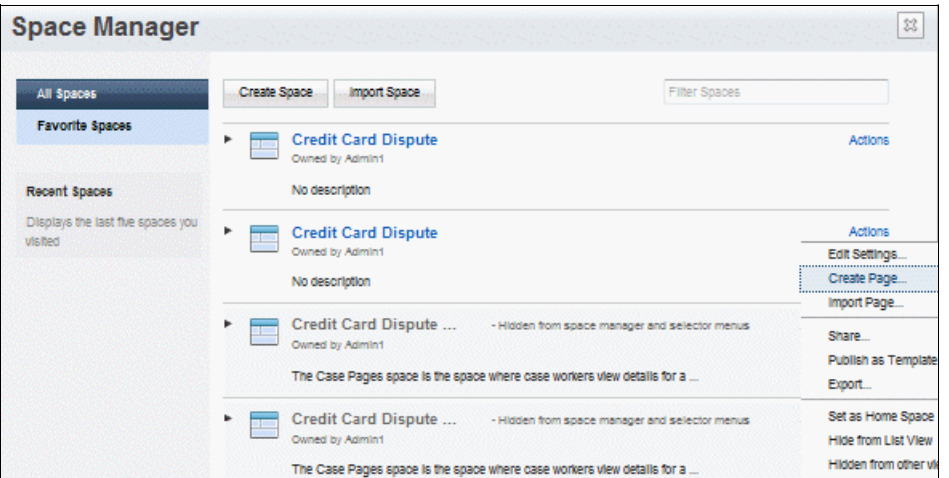


Figure 13-22 Creating a new page in space manager

2. Locate the Credit Card Dispute Case Pages entry and click **Actions** → **Create Page**.
3. Type Interactive Add Case as the **Page Name** and click **Create a page by duplicating another page**. Select **Credit Card Dispute Case Pages** in the **Space** drop-down list, and **Add Case** in the **Page** drop-down list. Make sure that the **Register this page** radio button is selected. See Figure 13-23 for set up. Click **OK**.

Create Page

- Page name:
Interactive Add Case

Page description:

☐ Create an empty page

☒ Create a page by duplicating another page

Space:
Credit Card Dispute Case Pages

Page:
Add Case

☐ Add a page from the catalog

☒ Register this page. [Learn more.](#)

OK Cancel

Figure 13-23 Creating the Interactive Add Case page

4. Select **New case page** from the **Page Type** drop-down list (see Figure 13-24 on page 443) and click **Save**.

Page Registration

Page Name:
Interactive Add Case

Page Description:

Page Type:
New case page

☐ Replace an existing page with this one:

Save Cancel

Figure 13-24 Registering the Interactive Add Case page

5. The new Interactive Add Case page can now be seen (Figure 13-25). Click the **Edit Page** button, then click the **Customize** button.

IBM Case Manager Credit Card Dispute Case... -

Add Case Case Details **Interactive Add Case** New Page

CASE-ID | Case Type | Case Description

Comments Add Task | Close

Case Data

Displays and updates case properties that were defined for the case type in the Case Manager Builder or Process Designer.

Figure 13-25 The new Interactive Add Case page

6. Click the **Customer Details** iWidget. See Figure 13-26 on page 444.

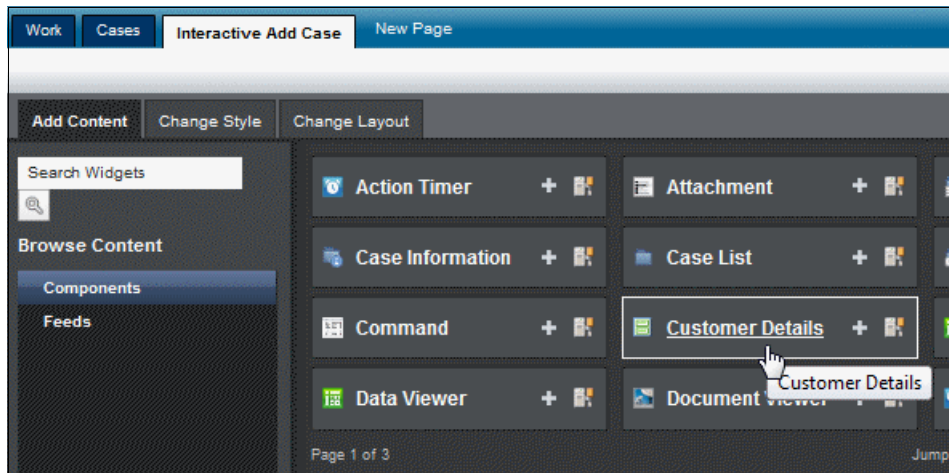


Figure 13-26 Adding the Customer Details iWidget

7. Click the **Add to page** button. See Figure 13-27.

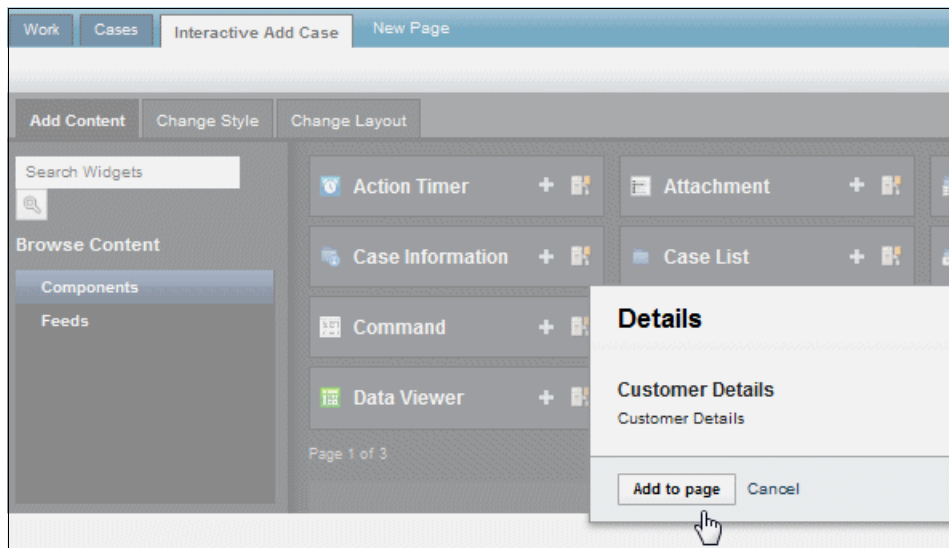


Figure 13-27 Adding the Customer Details iWidget to the page

8. Move the Customer Details iWidget so that it is just to the left of the Case Data iWidget. See Figure 13-28 on page 445.

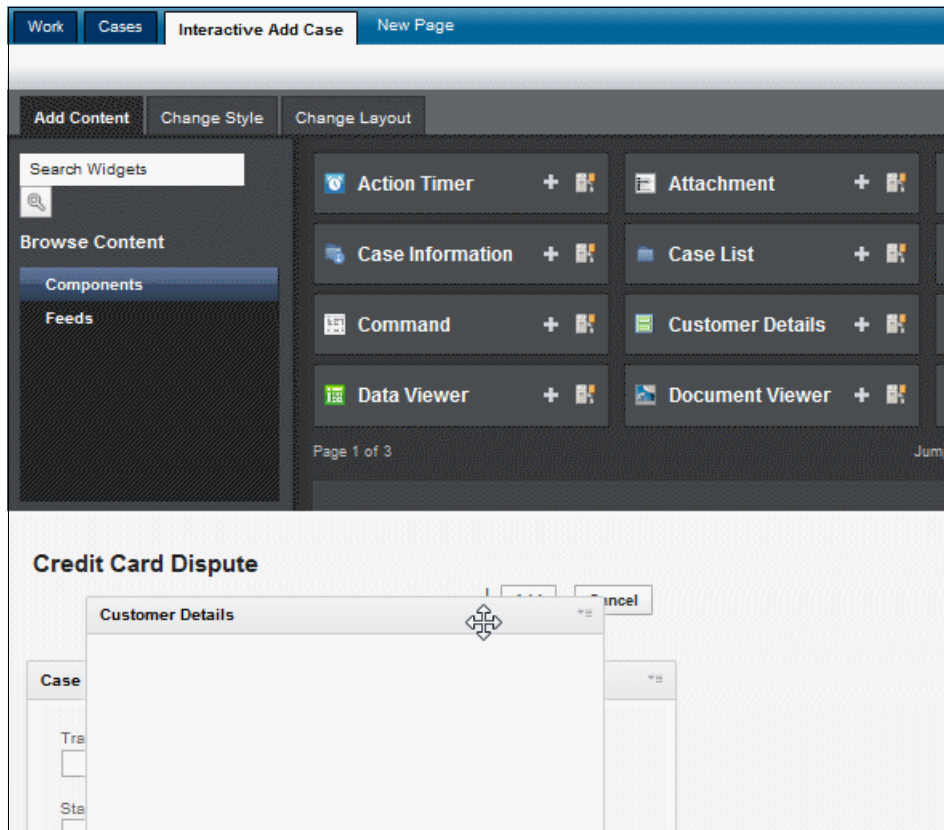


Figure 13-28 Positioning the Customer details iWidget

9. Resize the iWidget as shown in Figure 13-29 using the handle at the bottom right to size it.

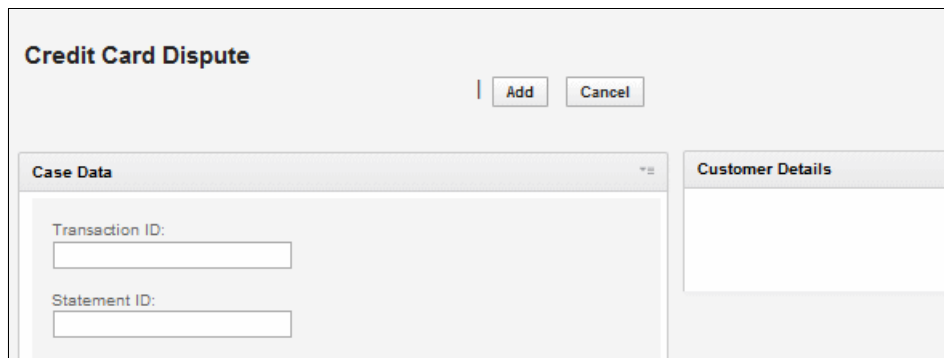


Figure 13-29 Resizing the Customer Details iWidget

10. Wire the Customer Details iWidget to the Case Details iWidget so that it can listen to the CaseInfoChanged event. Right-click the symbol on the top right of the Customer Details iWidget and select **Edit Wiring**.
11. Click the **Receive** tab and then select **CaseInfoChanged** using **CaseItemField**. See Figure 13-30.

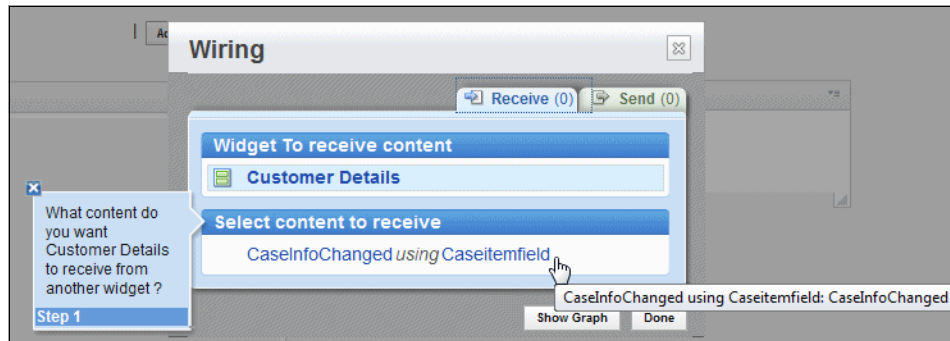


Figure 13-30 Wiring the iWidget

12. Click **Case Data** to wire the Customer Details iWidget to the Case Data iWidget. See Figure 13-31.

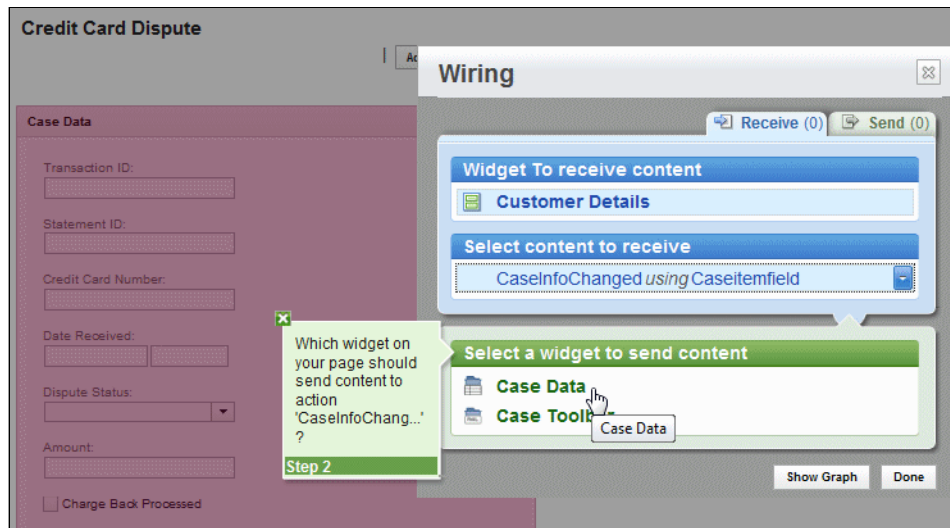


Figure 13-31 Wiring the iWidget

13. Click **Fieldchanged** as **CaseItemField** so that we receive events when the fields change, and then click **Done**. See Figure 13-32 on page 447.

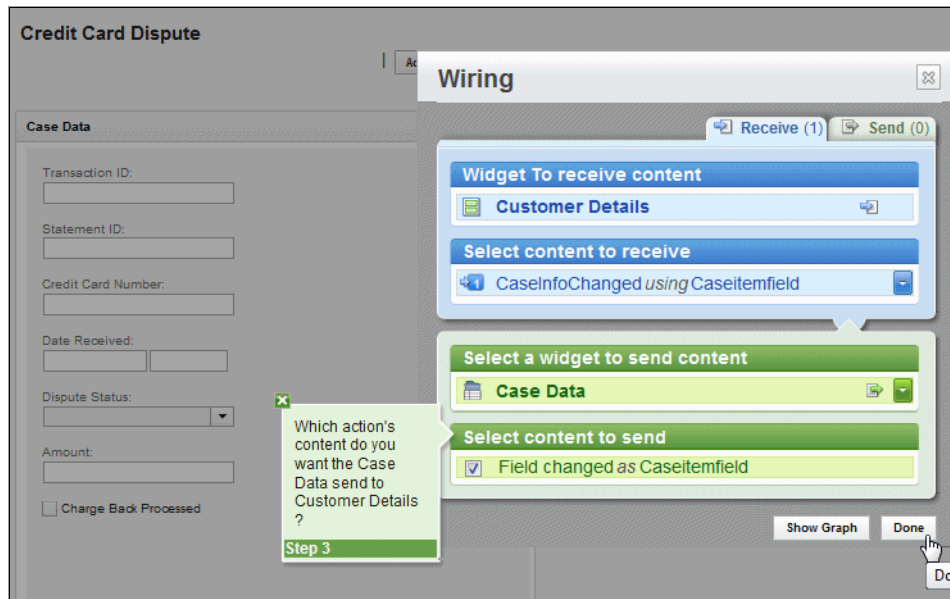


Figure 13-32 Wiring the iWidget

14. Click **Save**. The iWidget deployment and wiring is now complete. See Figure 13-33.

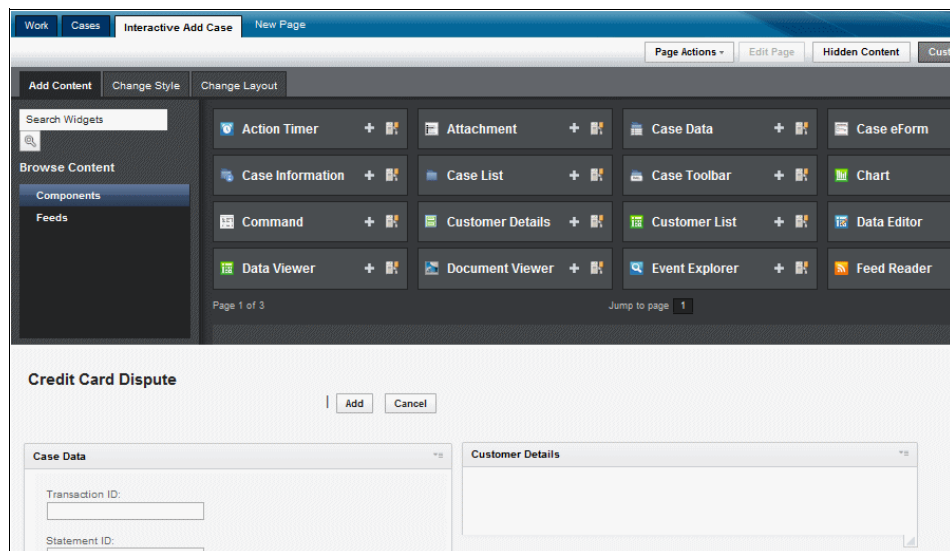
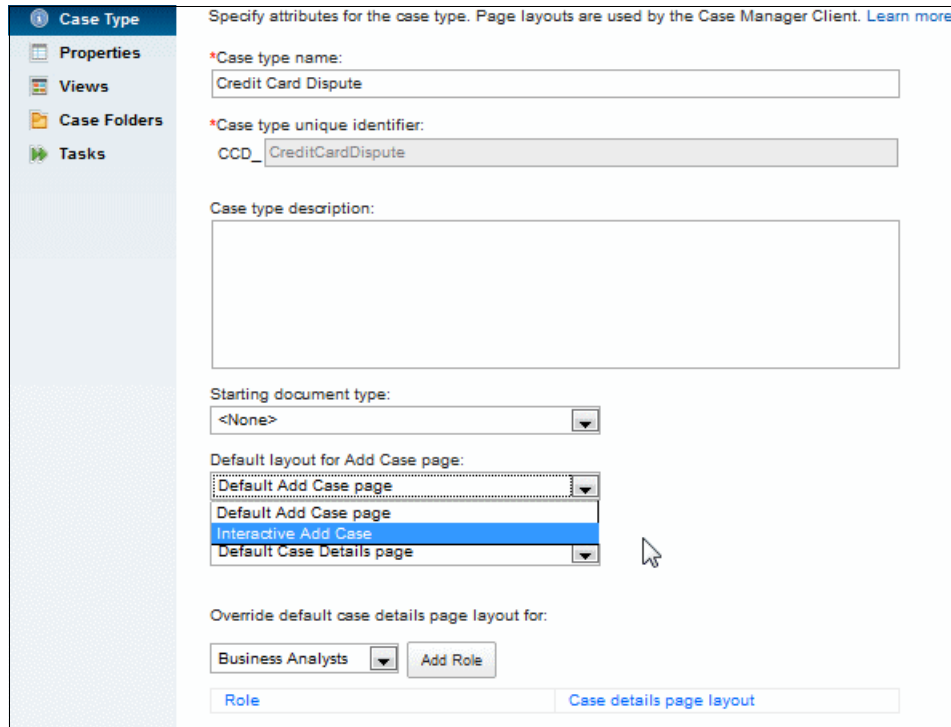


Figure 13-33 Saving the changes

15. Log in to Case Builder and edit the Credit Card Dispute solution. Navigate to the Credit Card Dispute case type and select **Interactive Add Case** from the **Default Layout for Add Case Pages** drop-down list.

The Interactive Add Case page is available in this dropdown list because we registered it. See Figure 13-34.



The screenshot shows the 'Case Type' configuration window in Case Builder. On the left is a sidebar with 'Case Type', 'Properties', 'Views', 'Case Folders', and 'Tasks'. The main area is titled 'Specify attributes for the case type. Page layouts are used by the Case Manager Client. [Learn more](#)'. It contains several fields: '*Case type name:' with the value 'Credit Card Dispute'; '*Case type unique identifier:' with the value 'CCD_CreditCardDispute'; 'Case type description:' with an empty text area; 'Starting document type:' with a dropdown set to '<None>'; 'Default layout for Add Case page:' with a dropdown menu open showing three options: 'Default Add Case page', 'Interactive Add Case' (which is highlighted in blue), and 'Default Case Details page'; and 'Override default case details page layout for:' with a dropdown set to 'Business Analysts' and an 'Add Role' button. At the bottom, there are two buttons: 'Role' and 'Case details page layout'.

Figure 13-34 Setting the default Add Case page

16. Click **Save**, **Close**, and then **Save and Close** to save the changes. Deploy the Credit Card Dispute solution again to copy the changes to the target.
17. Log out of Case Builder.

13.4.3 Using the new iWidget

Create a new case and use the iWidget in the Interactive Add Case page by following these steps:

1. Log into Case Client.
2. Add a new case. Notice that we are now using the Interactive Add Case page as the default.

3. Try entering the Credit Card Number 1234567812345678 (which does not exist). The credit card number does not exist message displays.
4. Now try entering the Credit Card Number 9999000011112222 (which does exist) and you will see the customer's details in the Customer Details iWidget.

This completes the sections on creating and deploying an iWidget.

13.5 Discussion of the iWidget code

The iWidget code presented is probably the most simple but useful code that you have seen. We will break it down into sections to explain how it works.

DISCLAIMER OF WARRANTIES: The accompanying code is sample code, created by IBM Corporation. This sample code is not part of any standard or IBM product and is provided to you solely for the purpose of assisting you in the development of your applications. The code is provided *as is*, without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample code, even if they have been advised of the possibility of such damages.

IMPORTANT: The iWidget is build using **Eclipse 3.5.1**. If you use another version or other development tools, you might have to modify the code to make it work.

Firstly, we start with the iWidget header (Example 13-6). This is a basic header. It only supports **view** (runtime) mode. If you add **edit** to the **supportedModes** entry, you can configure parameters when editing the mashups page.

The **iScope** entry defines the dojo Javascript class that will be used by the iWidget. In this case we have called it **com.mycompany.CustomerDetails**. This will be discussed more in the section of the dojo Javascript.

Example 13-6 The iWidget header

```
<iw:iwidget id="ActiveCaseInbaskets"
  xmlns:iw="http://www.ibm.com/xmlns/prod/iWidget"
  allowInstanceContent="true"
  iScope="com.mycompany.CustomerDetails"
  supportedModes="view" mode="view" lang="en">
```

The next section of code is the event **payload** definition (Example 13-7). In our example, the iWidget is receiving the **CaselInfoChanged** event from the CaseData widget and performing an action if the Credit Card Number field changes. In order to do this, it must understand what the payload looks like from the CaselInfoChanged event. The Case Management documentation describes all the event and payload types, and the payload definition is simply copied and pasted from the documentation, depending on what payload you need.

Example 13-7 The payload definition

```
<iw:payloadDef name="CaseItemField">
  <iw:payloadDef name="name" type="string" defaultValue=""
description=""/>
  <iw:payloadDef name="value" type="any" defaultValue=""
description=""/>
</iw:payloadDef>
```

Following that, we have the event definitions (Example 13-8). The first entry describes the **CaselInfoChanged** event that we will receive. Details of this event can be found in the documentation. We also specify a description name for the event “CaseInfoChangedDesc”, and an onEvent handler “handleCaselInfoChanged”, which will be covered in the dojo code section of the iWidget. The handled=”true” definition means that we are receiving this event (as opposed to sending it).

Example 13-8 The event definitions

```
<iw:event id="CaseInfoChanged" eventDescName="CaseInfoChangedDesc"
handled="true" onEvent="handleCaseInfoChanged" />

<iw:eventDescription id="CaseInfoChangedDesc"
payloadType="CaseItemField"></iw:eventDescription>
```

Following that we begin the content (display) section (Example 13-9). As we have only declared the view mode, we do not have an <iw:content mode=”edit”> section as well. This section can contain html or Javascript. We have only one html entry that is a div (divider) section. This acts as a placemark for our dojo code so that it can write into that html area in the iWidget based on its id parameter. The placemark is a dojo textbox with an id of “_IWID_customerinfo”.

Example 13-9 Content display

```
<iw:content mode="view">
  <![CDATA[
```

```
<div id="_IWID_customerInfo" dojotype="dijit.form.TextBox"></div>
```

Lastly, we have the dojo Javascript code section (Example 13-10). Normally, this is placed in a separate .js file and is included in the iWidget with an `<iw:resoruce uri="CustomerDetails.js"/>` reference. But because this is a simple widget, we can include it in the iWidget xml file.

The **dojo.provide** entry declares the Java class, and this needs to match the **iScope** entry mentioned previously.

The **dojo.declare** entry declares the code we are providing in this Java class.

Next we have the functions **onLoad** and **onView**. **onLoad** is called during the initialization of the iWidget, and **onView** is called when your iWidget's content needs to change back to view mode after being in edit mode. In our simple iWidget we are not using these functions, but most iWidgets will.

The last function is **handleCaseInfoChanged**, which we declared in the **CaseInfoChanged** event section above. The code gets the payload from the event and looks at the field name. If it is `CCD_CreditCardNumber`, it checks to see if it is a valid credit card number, in which case it fills the customerinfo textbox with the customer details. If it is not a valid credit card number it shows an alert message.

Example 13-10 the dojo Javascript code

```
<script type="text/javascript">

    dojo.provide("com.mycompany.CustomerDetails");

    dojo.declare("com.mycompany.CustomerDetails", null,
    {
        onLoad: function()
        {
        },

        onView: function()
        {
        },

        handleCaseInfoChanged: function(iEvent)
        {
            var field = iEvent.payload;

            if (field.name == "CCD_CreditCardNumber")
```

```

        {
            // here we would call a backend server to return the
customer
            // information based on credit card number using the dojo.xhrGet()
            // call, but for this example we will fluff a result.
            var customerInfo = dojo.byId("_IWID_customerInfo");

            if (field.value == "9999000011112222")
            {
                customerInfo.innerHTML = "Mr Fictional Character, 46 Unknown Boulevard, Los Angeles
CA. Tel: (666) 12-34567";
            }
            else
            {
                alert("Credit card number " + field.value + " not found");
            }
        }
    });
</script>

```

In the real world, we would be getting the customer details from a backend server. Here is an example of the code we might use to talk to a REST or other web service that can access a DB2 database. Example 13-11 shows how to modify the `handleCaseInfoChanged` function to do that.

Example 13-11 Changing the `handleCaseInfoChanged` function to retrieve customer details from a REST service

```

handleCaseInfoChanged: function(iEvent)
{
    var field = iEvent.payload;

    if (field.name == "CCD_CreditCardNumber")
    {
        dojo.xhrGet(
        {
            url: "/DB2Rest/getCustomerDetails/" + field.value,
            handleAs: "json-comment-optional",

            load: function(data)
            {
                // Callback to handle the data

                customerinfo.innerHTML = data.details;
            },

```

```
error: function(data)
{
    // The error callback

    alert("Error accessing customer details REST service");
}
}
}
```



Part 4

Appendixes

Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this book.

IBM Redbooks

The following IBM Redbooks publications provide additional information about the topic in this document. Note that some publications referenced in this list might be available in softcopy only.

- ▶ *IBM FileNet Content Manager Implementation Best Practices and Recommendations*, SG24-7547
- ▶ *Introducing IBM FileNet Business Process Manager*, SG24-7509
- ▶ *Understanding IBM FileNet Records Manager*, SG24-7623 (IBM FileNet Records Manager is currently known as IBM Enterprise Records)
- ▶ *IBM High Availability Solution for IBM FileNet P8*, SG24-7700
- ▶ *Disaster Recovery and Backup Solutions for IBM FileNet P8 Version 4.5.1 Systems*, SG24-7744
- ▶ *Federated Content Management: Accessing Content from Disparate Repositories with IBM Content Federation Services and IBM Content Integrator*, SG24-7742
- ▶ *IBM FileNet P8 Platform and Architecture*, SG24-7667

You can search for, view, or download Redbooks, Redpapers, Technotes, draft publications and Additional materials, as well as order hardcopy Redbooks publications, at this website:

ibm.com/redbooks

Online resources

These web sites are also relevant as further information sources:

- ▶ IBM Case Manager main information page
<http://www-01.ibm.com/software/advanced-case-management/case-manager>

- ▶ IBM FileNet P8 Platform main information page
<http://www.ibm.com/software/data/content-management/filenet-p8-platform>
- ▶ IBM FileNet P8 Version 5.0 Information Center:
<http://publib.boulder.ibm.com/infocenter/p8docs/v5r0m0/index.jsp>
- ▶ IBM FileNet P8 Platform product documentation
<http://www.ibm.com/support/docview.wss?rs=3247&uid=swg27010422>
This URL includes links to all expansion IBM FileNet P8 products.
- ▶ IBM FileNet Content Manager
<http://www.ibm.com/software/data/content-management/filenet-content-manager>
- ▶ IBM FileNet Business Process Manager
<http://www.ibm.com/software/data/content-management/filenet-business-process-manager>

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